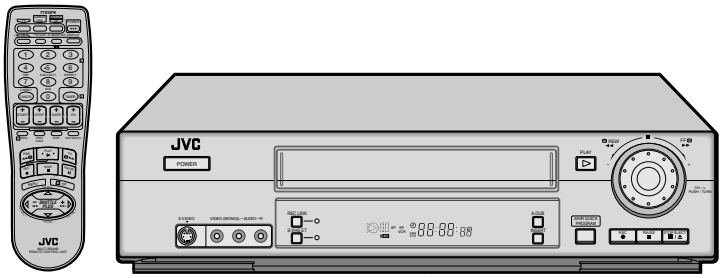
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-S3910U, HR-S5910U



S-VHS Hi-Fi VCR Plus+ 3 Cable Box Control Super VHS ET

Regarding service information other than these sections, refer to the HR-S3900U service manual (No. 82848). Also, be sure to note important safety precautions provided in the service manual.

SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-S3900U/S3910U/S5900U/S5910U)*

GENERAL

Power requirement	: AC 120 V~ , 60 Hz
Power consumption	
Power on	: 20 W
Power off	: 2.5 W
Temperature	
Operating	: 5°C to 40°C (41°F to 104°F)
Storage	: –20°C to 60°C (–4°F to140°F)
Operating position	: Horizontal only
Dimensions (W x H x D)	: 400 x 94 x 283 mm
Weight	: 3.3 kg
Format	: S-VHS/VHS NTSC standard
Maximum recording time	
SP	: 210 min. with ST-210 video cassette
EP	: 630 min. with ST-210 video cassette

VIDEO/AUDIO

Signal system	: NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording/ Playback system	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	
VHS	: 230 lines
S-VHS	: 400 lines
Frequency range	
Normal audio	: 70 Hz to 10,000 Hz
Hi-Fi audio	: 20 Hz to 20,000 Hz
Input/Output	: RCA connectors (IN x 2, OUT x 1) S-video connectors For HR-S5900U/5910U:(IN x 2, OUT x 1) For HR-S3900U/3910U:(IN x 1, OUT x 1)

TUNER

Tuning system	: Frequency-synthesized tuner
Channel coverage	
VHF	: Channels 2–13
UHF	: Channels 14–69
CATV	: 113 Channels
RF output	: Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced

TIMER

Clock reference	: Quartz
Program capacity	: 1-year programmable timer/ 8 programs

Memory backup for timer is not supported.

ACCESSORIES

Provided accessories	: Infrared remote control unit, "AA" battery x 2, S-video cable (4-pin), RF cable (F-type)

Specifications shown are for SP mode unless specified otherwise.
E. & O.E. Design and specifications subject to change without notice.

This service manual is printed on 100% recycled paper.
COPYRIGHT © 2001 VICTOR COMPANY OF JAPAN, LTD.
No. 82859
March 2001

[HR-S3910U/U(C)]

The following table indicate main different points between models HR-S3900U,HR-S3910U and HR-S3910U(C).

ITEM \ MODEL	HR-S3900U	HR-S3910U	HR-S3910U(C)
FRONT PANEL color	BLACK	PURE SILVER	←

[HR-S5910U/U(C)]

The following table indicate main different points between models HR-S5900U,HR-S5910U and HR-S5910U(C).

ITEM \ MODEL	HR-S3900U	HR-S5910U	HR-S5910U(C)
FRONT PANEL color	BLACK	PURE SILVER	←

[HR-S3910U/U(C)]

The following table indicate different parts number between models HR-S3900U,HR-S3910U and HR-S3910U(C).

PACKING AND ACCESSORY ASSEMBLY <M1>

⚠ REF. NO	ITEM \ MODEL	HR-S3900U	HR-S3910U	HR-S3910U(C)
301	PACKING CASE	LP30899-001B	LP30899-005B	←
⚠ 310	INST BOOK(FR)	—	—	LPT0503-002A
316	WARRANTY CARD	—	—	BT-52004-1
317	REGIST.CARD	BT-51020-2	←	—
319	SER.NET CARD	—	—	BT-20071B

FINAL ASSEMBLY <M2>

⚠ REF. NO	ITEM \ MODEL	HR-S3900U	HR-S3910U	HR-S3910U(C)
⚠ 501	FRONT PANEL ASSY	LP10289-063D	LP10289-068B	←
501A	CASSETTE DOOR	LP20868-035A	LP20868-039A	←
501C	DISPLAY WINDOE	LP20869-093A	LP20869-0A2A	←
501D	ORNAMENT	LP21014-001C	LP21014-002A	←
⚠ 502	TOP COVER	LP10013-021D	LP10013-045A	←
503	SCREW,X2 TOP COVER(SIDE)	QYTDSF3010M	QYTDSF3010R	←
529	KNOB ASSY	LP30954-001A	LP30954-002A	←

[HR-S5910U/U(C)]

The following table indicate different parts number between models HR-S5900U,HR-S5910U and HR-S5910U(C).

PACKING AND ACCESSORY ASSEMBLY <M1>

⚠ REF. NO	ITEM \ MODEL	HR-S5900U	HR-S5910U	HR-S5910U(C)
301	PACKING CASE	LP30899-001B	LP30899-005B	←
⚠ 310	INST BOOK(FR)	—	—	LPT0503-002A
316	WARRANTY CARD	—	—	BT-52004-1
317	REGIST.CARD	BT-51020-2	←	—
319	SER.NET CARD	—	—	BT-20071B

FINAL ASSEMBLY <M2>

⚠ REF. NO	ITEM \ MODEL	HR-S5900U	HR-S5910U	HR-S5910U(C)
⚠ 501	FRONT PANEL ASSY	LP10289-062C	LP10289-069B	←
501A	CASSETTE DOOR	LP20868-005A	LP20868-039A	←
501C	DISPLAY WINDOE	LP20869-092A	LP20869-0A3A	←
501D	ORNAMENT	LP21014-001C	LP21014-002A	←
⚠ 502	TOP COVER	LP10013-021D	LP10013-045A	←
503	SCREW,X2 TOP COVER(SIDE)	QYTDSF3010M	QYTDSF3010R	←
529	KNOB ASSY	LP30954-001A	LP30954-002A	←

Notes : Mark — is not used.
Mark ← is same as left.

(Sanwa)-V14S1/S15
HR-S3910U/U(C), HR-S5910U/U(C)

JVC SERVICE & ENGINEERING COMPANY OF AMERICA
DIVISION OF JVC AMERICAS CORP.

Head office	:	1700 Valley Road Wayne, New Jersey 07470-9976	(973)315-5000
East Coast	:	10 New Maple Avenue Pine Brook, New Jersey 07058-9641	(973)396-1000
Midwest	:	705 Enterprise Street Aurora, Illinois 60504-8149	(630)851-7855
West Coast	:	5665 Corporate Avenue Cypress, California 90630-0024	(714)229-8011
Atlanta	:	1500 Lakes Parkway Lawrenceville, Georgia 30043-5857	(770)339-2582
Hawaii	:	2969 Mapunapuna Place Honolulu, Hawaii 96819-2040	(808)833-5828

JVC

JVC CANADA INC.

Head office	:	21 Finchdene Square Scarborough, Ontario M1X 1A7	(416)293-1311
Montreal	:	16800 Rte Trans-Canadienne, Kirkland, Quebec H9H 5G7	(514)871-1311
Vancouver	:	13040 Worster Court Richmond, B.C. V6V 2B3	(604)270-1311

Printed in Japan

JVC

HR-S3900U/S5900U

JVC SERVICE & ENGINEERING COMPANY OF AMERICA

DIVISION OF JVC AMERICAS CORP.

Head office	:	1700 Valley Road Wayne, New Jersey 07470-9976	(973)315-5000
East Coast	:	10 New Maple Avenue Pine Brook, New Jersey 07058-9641	(973)396-1000
Midwest	:	705 Enterprise Street Aurora, Illinois 60504-8149	(630)851-7855
West Coast	:	5665 Corporate Avenue Cypress, California 90630-0024	(714)229-8011
Atlanta	:	1500 Lakes Parkway Lawrenceville, Georgia 30043-5857	(770)339-2582
Hawaii	:	2969 Mapunapuna Place Honolulu, Hawaii 96819-2040	(808)833-5828

JVC CANADA INC.

Head office	:	21 Finchdene Square Scarborough, Ontario M1X 1A7	(416)293-1311
Montreal	:	16800 Rte Trans-Canadienne, Kirkland, Quebec H9H 5G7	(514)871-1311
Vancouver	:	13040 Worster Court Richmond, B.C. V6V 2B3	(604)270-1311

JVC

No. 82848

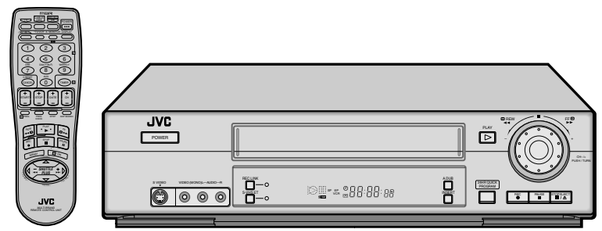
S40895-03

JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-S3900U/U(C), HR-S5900U/U(C)



S-VHS Hi-Fi VCR plus+ G3 CABLE BOX CONTROL Super VHS ET

SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-S3900U/S3910U/S5900U/S5910U)*

GENERAL

Power requirement	: AC 120 V~ , 60 Hz
Power consumption	
Power on	: 20 W
Power off	: 2.5 W
Temperature	
Operating	: 5°C to 40°C (41°F to 104°F)
Storage	: –20°C to 60°C (–4°F to140°F)
Operating position	: Horizontal only
Dimensions (W x H x D)	: 400 x 94 x 283 mm
Weight	: 3.3 kg
Format	: S-VHS/VHS NTSC standard
Maximum recording time	
SP	: 210 min. with ST-210 video cassette
EP	: 630 min. with ST-210 video cassette

VIDEO/AUDIO

Signal system	: NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording/ Playback system	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	
VHS	: 230 lines
S-VHS	: 400 lines
Frequency range	
Normal audio	: 70 Hz to 10,000 Hz
Hi-Fi audio	: 20 Hz to 20,000 Hz
Input/Output	: RCA connectors (IN x 2, OUT x 1) S-video connectors For HR-S5900U/5910U: (IN x 2, OUT x 1) For HR-S3900U/3910U: (IN x 1, OUT x 1)

TUNER

Tuning system	: Frequency-synthesized tuner
Channel coverage	
VHF	: Channels 2–13
UHF	: Channels 14–69
CATV	: 113 Channels
RF output	: Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced

TIMER

Clock reference	: Quartz
Program capacity	: 1-year programmable timer/ 8 programs

Memory backup for timer is not supported.

ACCESSORIES

Provided accessories	: Infrared remote control unit, “AA” battery x 2, S-video cable (4-pin), RF cable (F-type)

Specifications shown are for SP mode unless specified otherwise.
E. & O.E. Design and specifications subject to change without notice.

Printed in Japan

This service manual is printed on 100% recycled paper.
COPYRIGHT © 2001 VICTOR COMPANY OF JAPAN, LTD.

No. 82848
March 2001

TABLE OF CONTENTS

Section	Title	Page
Important Safety Precautions		
INSTRUCTIONS		
1. DISASSEMBLY		
1.1	Disassembly flow chart	1-1
1.2	How to read the disassembly and assembly	1-1
1.3	Disassembly/assembly method	1-1
1.4	Service position	1-4
1.4.1	How to set the "Service position"	1-4
1.5	Mechanism service mode	1-4
1.5.1	How to set the "Mechanism service mode"	1-4
1.6	Jig RCU mode	1-4
1.6.1	Setting the Jig RCU mode	1-4
1.6.2	Setting the User RCU mode	1-4
1.7	Emergency display function	1-5
1.7.1	Displaying the EMG information	1-5
1.7.2	Clearing the EMG history	1-5
1.7.3	EMG content description	1-6
1.7.4	EMG detail information <1>	1-7
1.7.5	EMG detail information <2>	1-8
2. MECHANISM ADJUSTMENT		
2.1	Before starting repair and adjustment	2-1
2.1.1	Precautions	2-1
2.1.2	Checking for proper mechanical operations	2-1
2.1.3	Manually removing the cassette tape	2-1
2.1.4	Jigs and tools required for adjustment	2-2
2.1.5	Maintenance and inspection	2-3
2.2	Replacement of major parts	2-6
2.2.1	Before starting disassembling (Phase matching between mechanical parts)	2-6
2.2.2	How to set the "Mechanism assembling mode"	2-6
2.2.3	Cassette holder assembly	2-6
2.2.4	Pinch roller arm assembly	2-8
2.2.5	Guide arm assembly and press lever assembly	2-8
2.2.6	A/C head	2-8
2.2.7	Loading motor	2-8
2.2.8	Capstan motor	2-9
2.2.9	Pole base assembly (supply or take-up side)	2-9
2.2.10	Rotary encoder	2-10
2.2.11	Clutch unit	2-10
2.2.12	Change lever assembly, direct gear, clutch gear and coupling gear	2-10
2.2.13	Link lever	2-11
2.2.14	Cassette gear, control cam and worm gear	2-11
2.2.15	Control plate	2-11
2.2.16	Loading arm gear (supply or take-up side) and loading arm gear shaft	2-12
2.2.17	Take-up lever, take-up head and control plate guide	2-13
2.2.18	Capstan brake assembly	2-13
2.2.19	Sub brake assembly (take-up side)	2-13
2.2.20	Main brake assembly (take-up side), reel disk (take-up side) and main brake assembly (supply side)	2-13
2.2.21	Tension brake assembly, reel disk (supply side) and tension arm assembly	2-14
2.2.22	Idler lever, idler arm assembly	2-14
2.2.23	Stator assembly	2-14
2.2.24	Rotor assembly	2-14
2.2.25	Upper drum assembly	2-15
2.3	Compatibility adjustment	2-16
2.3.1	FM waveform linearity	2-16
2.3.2	Height and tilt of the A/C head	2-17
2.3.3	A/C head phase (X-value)	2-17
2.3.4	Standard tracking preset	2-18
2.3.5	Tension pole position	2-18

Section	Title	Page
3. ELECTRICAL ADJUSTMENT		
3.1	Precaution	3-1
3.1.1	Required test equipments	3-1
3.1.2	Required adjustment tools	3-1
3.1.3	Color (colour) bar signal,Color (colour) bar pattern	3-1
3.1.4	Switch settings and standard precautions	3-1
3.1.5	EVR Adjustment	3-1
3.2	Servo circuit	3-2
3.2.1	Switching point	3-2
3.2.2	Slow tracking preset	3-2
3.3	Video circuit	3-2
3.3.1	D/A level	3-2
3.3.2	EE Y/PB Y (S-VHS/VHS) level	3-2
3.3.3	REC color (colour) level	3-3
3.3.4	Video EQ (Frequency response)	3-3
3.3.5	Auto picture initial setting	3-4
3.4	Audio circuit	3-4
3.4.1	Audio REC FM	3-4
3.5	Demodulator circuit	3-4
3.5.1	Input level	3-4
3.5.2	Stereo VCO	3-5
3.5.3	Stereo filter	3-5
3.5.4	Separation - 1	3-5
3.5.5	Separation - 2	3-5
3.5.6	SAP VCO	3-6
4. CHARTS AND DIAGRAMS		
NOTES OF SCHEMATIC DIAGRAM		4-1
CIRCUIT BOARD NOTES		4-2
4.1	BOARD INTERCONNECTIONS	4-3
4.2	MAIN (VIDEO/AUDIO) SCHEMATIC DIAGRAM	4-5
4.3	MAIN (S-SUB) SCHEMATIC DIAGRAM	4-7
4.4	MAIN (SYSCON) SCHEMATIC DIAGAM	4-9
4.5	MAIN (SW.REG) SCHEMATIC DIAGRAM	4-11
4.6	MAIN (TUNER/DEMOD) SCHEMATIC DIAGRAM	4-13
4.7	MAIN (FRONT) AND ADV. JOG SCHEMATIC DIAGRAMS	4-15
4.8	MAIN (TERMINAL) SCHEMATIC DIAGRAM	4-17
4.9	MAIN (BS CONNECTION), S-JACK, R.PAUSE AND C.BOX CTL SCHEMATIC DIAGRAMS	4-19
4.10	2D DIGITAL SCHEMATIC DIAGRAM	4-21
4.11	DEMODULATOR SCHEMATIC DIAGRAM	4-23
4.12	MAIN, R.PAUSE AND C.BOX CTL CIRCUIT BOARDS	4-25
4.13	2D DIGITAL AND DEMODULATOR CIRCUIT BOARDS	4-28
4.14	REMOTE CONTROLLER SCHEMATIC DIAGRAM	4-29
4.15	FDP GRID ASSIGNMENT AND ANODE CONNECTION	4-30
4.16	WAVEFORMS	4-31
4.17	VOLTAGE CHARTS	4-33
4.18	CPU PIN FUNCTION	4-34
4.19	SYSTEM CONTROL BLOCK DIAGRAM	4-35
4.20	VIDEO BLOCK DIAGRAM	4-37
4.21	AUDIO BLOCK DIAGRAM	4-41
5. PARTS LIST		
5.1	PACKING AND ACCESSORY ASSEMBLY <M1>	5-1
5.2	FINAL ASSEMBLY <M2>	5-2
5.3	MECHANISM ASSEMBLY <M4>	5-4
5.4	ELECTRICAL PARTS LIST	5-6
	MAIN BOARD ASSEMBLY <03>	5-6
	2D DIGITAL BOARD ASSEMBLY <05>	5-12
	A/C HEAD BOARD ASSEMBLY <12>	5-13
	DEMOD BOARD ASSEMBLY <14>	5-13
	S JACK BOARD ASSEMBLY(S5900U/U(C))<36>	5-13
	ADV.JOG BOARD ASSEMBLY <38>	5-13
	LOADING MOTOR BOARD ASSEMBLY <55>	5-14
	R.PAUSE BOARD ASSEMBLY <91>	5-14
	C.BOX BOARD ASSEMBLY <92>	5-14

The following table lists the differing points between Models (HR-S3900U/U(C), HR-S5900U and HR-S5900U(C)) in this series.

	HR-S3900U/U(C)	HR-S5900U	HR-S5900U(C)
FLYING ERASE HEAD	NOT USED	USED	USED
INSERT/OPERATION	NOT USED	USED	USED
AUDIO DUBBING/OPERATION	NOT USED	USED	USED
REC RESUME	NOT USED	NOT USED	USED
FRONT SOVIDEO INPUT TERMINAL	NOT USED	USED	USED

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded ( ) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape 3) Spacers 5) Barrier
   2) PVC tubing 4) Insulation sheets for transistors

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

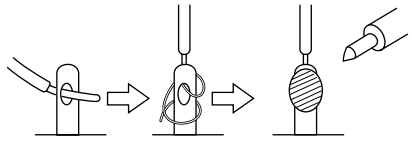


Fig.1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

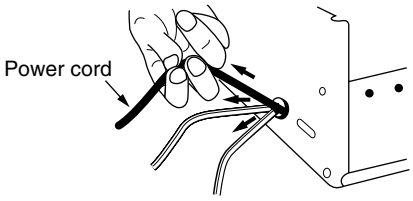


Fig.2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission.
    Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits.
    Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) Connector part number : E03830-001
    2) Required tool : Connector crimping tool of the proper type which will not damage insulated parts.
    3) Replacement procedure
    (1) Remove the old connector by cutting the wires at a point close to the connector.
    Important : Do not reuse a connector (discard it).

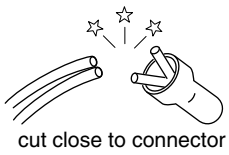


Fig.3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

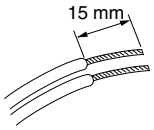


Fig.4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

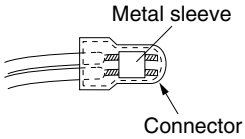


Fig.5

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

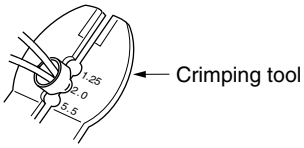


Fig.6

(5) Check the four points noted in Fig.7.

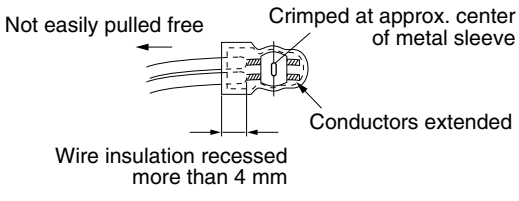

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig.7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

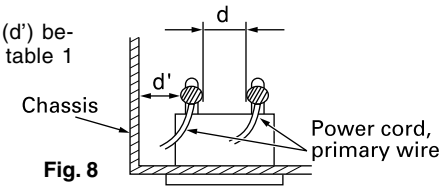


Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method : (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

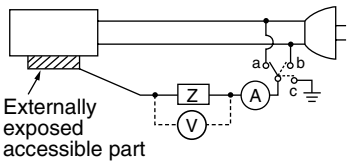


Fig. 9

5. Grounding (Class 1 model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

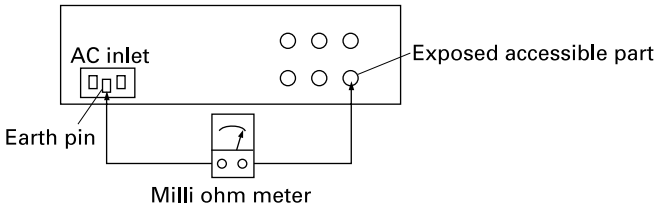


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 miute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	1 MΩ ≦ R ≦ 12 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ/500 V DC	AC 3 kV 1 minute (Class Ⅱ) AC 1.5 kV 1 minute (Class Ⅰ)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

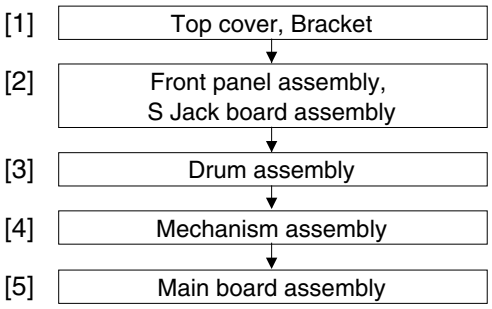
Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 1
DISASSEMBLY

1.1 Disassembly flow chart

This flowchart lists the disassembling steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend, route and dress the flat cables as they were originally laid.



1.2 How to read the disassembly and assembly

<Example>

Step/ Loc No.	Part Name	Fig. No.	Point	Note
[1]	Top cover, Bracket	D1	4(S1a),(S1b),3(L1a), 2(SD1a),(P1a),(W1a), CN1(WR1a), 2(S1c)	<Note 1a>

(1) (2) (3) (4) (5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) No. of parts Figures.
(2) Part name to be removed or installed.
(3) Fig. No. showing procedure or part location.
(4) Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.
P= Spring, W= Washer, S= Screw, L= Locking tab, SD= Solder, CN**(WR**)= Remove the wire (WR**) from the connector (CN**).

Note:

- ***The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.***

(5) Adjustment information for installation

1.3 Disassembly/assembly method

Step/ Loc No.	Part Name	Fig. No.	Point	Note
[1]	Top cover, Bracket	D1	3(S1a) 2(S1b)	
[2]	Front panel assembly S Jack board assembly	D2	CN7001(WR2a) 7(L2a) CN7108(WR2b), 2(S2a)	<Note 2a> <Note 2b> <Note 2c>
[3]	Drum assembly	D3	CON1(WR3a), CN1(WR3b), (S3a), (W3a), Spacer, (S3b), (S3c)	<Note 2c>
[4]	Mechanism assembly	D4	CN2001(WR4a), (S4a), (S4b), (S4c), (S4d)	<Note 2c> <Note 4a>
[5]	Main board assembly	D5	(S5a), 7(L5a)	

<Note 2a>

- When reattaching the Front panel assembly, make sure that the door opener “a” of the Cassette holder assembly is lowered in position prior to the reinstallation.

<Note 2b>

- When reattaching the Front panel assembly, pay careful attention to the switch lever not to make it touch the switch knob “b” of the Main board assembly from the side.

<Note 2c>

- Be careful not to damage the connector and wire etc. during connection and disconnection.
When connecting the wire to the connector, be careful with the wire direction.

<Note 4a>

- When it is required to remove the screws (S4a to S4b) retaining the Mechanism assembly, please refer to the “Procedures for Lowering the Cassette holder assembly”(See on page 1-2).
- When reattaching the Mechanism assembly to the Main board assembly, take care not to damage the sensors and switch on the Main board assembly.

Procedures for Lowering the Cassette holder assembly

As the mechanism of this unit is integrated with the Housing assembly, the holder must be lowered and the two screws unscrewed when removing the Mechanism assembly.

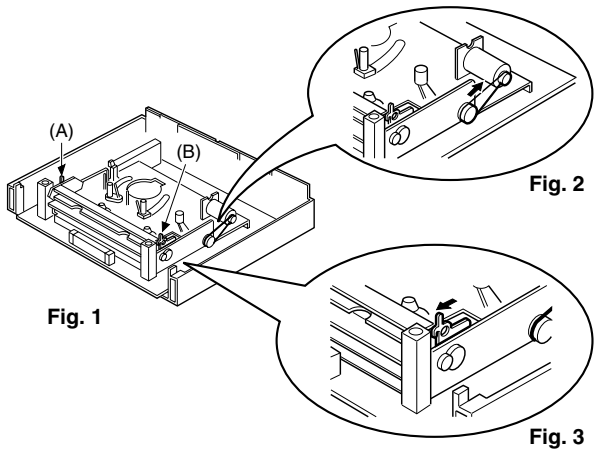


Fig. 1

Fig. 2

Fig. 3

Turn the loading motor pulley in the direction as indicated by Fig.2. As both (A) and (B) levers are lodged twice, push the levers in the direction as indicated by Fig.3 to release them. When pushing the levers, do it in the order of (A), (B), (B), (A). When the holder has been lowered, turn the pulley until the cassette holder is securely in place without allowing any up/down movement.

Procedures for Lowering the Cassette holder assembly

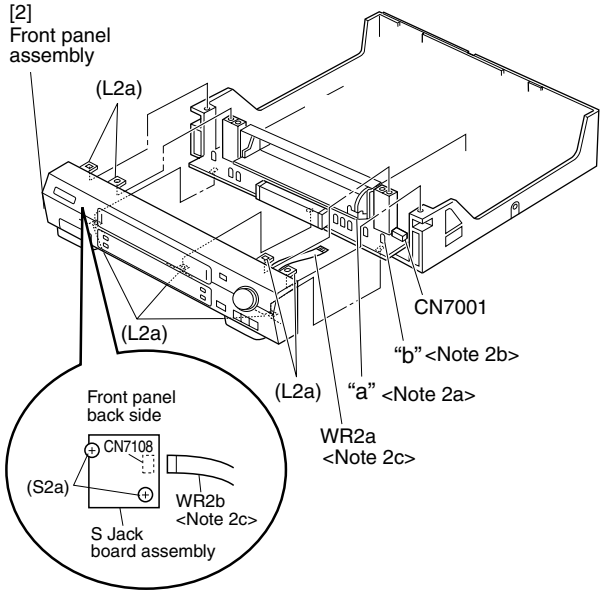


Fig. D2

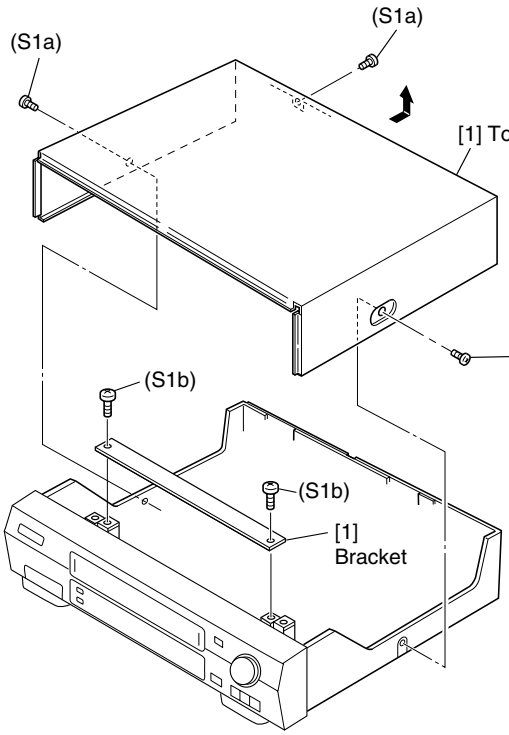


Fig. D1

Note:
When installing the Drum assembly, secure the screws (S3a to S3c) in the order of a, b, c.

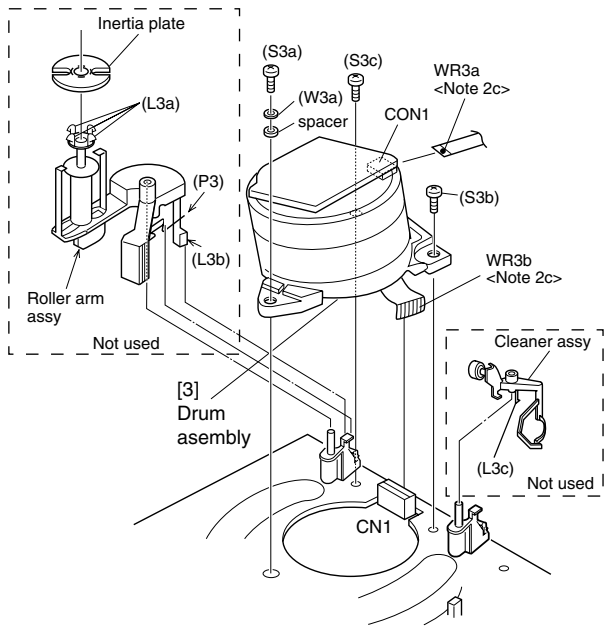


Fig. D3

Note:
When installing the Mechanism assembly, secure the screws (S4a to S4b) in the order of a, b.

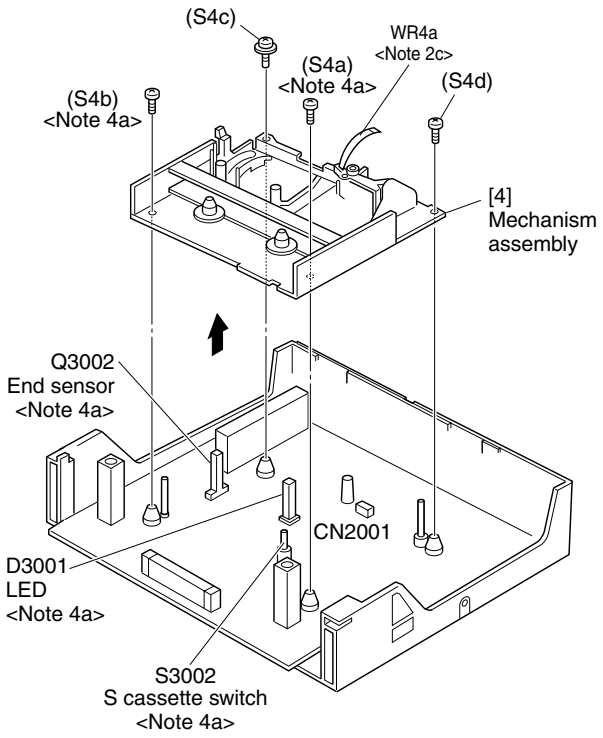


Fig. D4

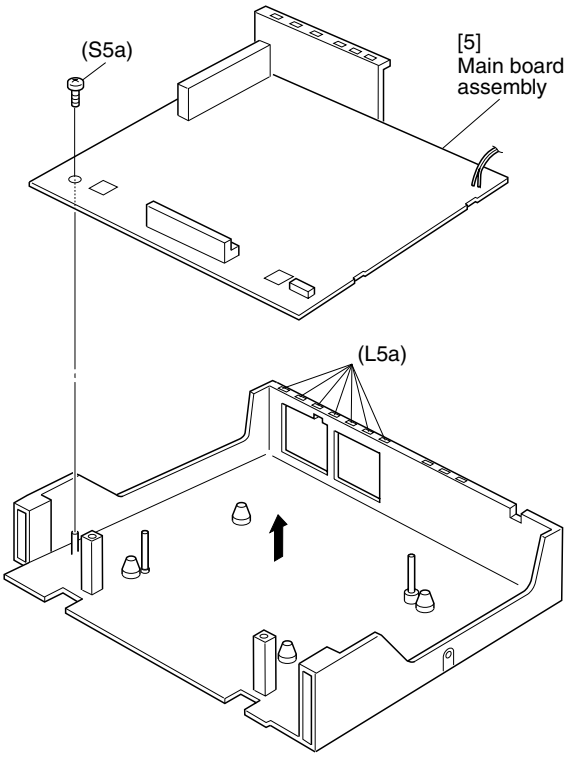


Fig. D5

1.4 Service position

This unit has been designed so that the Mechanism and Main board assemblies can be removed together from the chassis assembly. Before diagnosing or servicing the circuit boards, take out the major parts from the chassis assembly.

1.4.1 How to set the "Service position"

(1) Refer to the disassembly procedure and perform the disassembly of the major parts before removing the Drum assembly.
(2) Lower the cassette holder to prepare for the removal of the Mechanism assembly screws. (Refer to the "Procedures for lowering the Cassette holder assembly" of 1.3 Disassembly/assembly method.)
(3) Remove the combined Mechanism and Main board assemblies.
(4) Connect the wires and connectors of the major parts that have been removed in step (1). (Refer to Fig.1-4-1a.)
(5) Place the combined Mechanism and Main board assemblies upside down.
(6) Insert the power cord plug into the power outlet and then proceed with the diagnostics and servicing of the board assembly.

Notes:

- ***Before inserting the power cord plug into the power outlet, make sure that none of the electrical parts are able to short-circuit between the workbench and the board assembly.***
- ***For the disassembly procedure of the major parts and details of the precautions to be taken, see "1.3 Disassembly/assembly method".***
- ***If there are wire connections from the Main board and Mechanism assemblies to the other major parts, be sure to remove them (including wires connected to the major parts) first before performing step (2).***
- ***When carrying out diagnosis and repair of the Main board assembly in the "Service position", be sure to ground both the Main board and Mechanism assemblies. If they are improperly grounded, there may be noise on the playback picture or FDP counter display may move even when the mechanism is kept in an inoperative status.***
- ***In order to diagnose the playback or recording of the cassette tape, set the Mechanism assembly to the required mode before placing it upside down. If the mechanism mode is changed (including ejection) while it is in an upside down position the tape inside may be damaged.***
- ***The mechanism and board assemblies of this unit are attached by connectors only.***
  When carrying out a diagnosis or repair of the boards in the "Service position", make sure that the connectors are not disconnected.

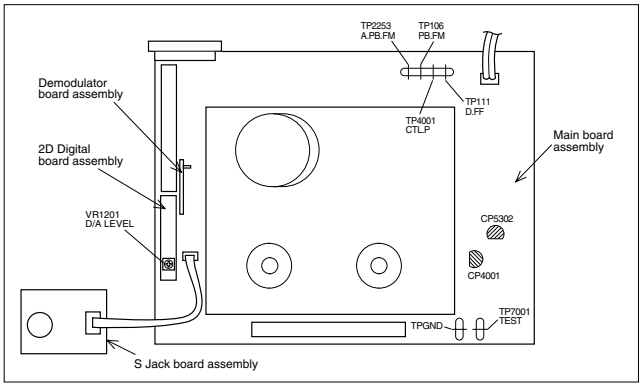


Fig. 1-4-1a

1.5 Mechanism service mode

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "Mechanism service mode".

1.5.1 How to set the "Mechanism service mode"

(1) Unplug the power cord plug from the power outlet.
(2) Connect TPGND and TP7001(TEST) on the Main board assembly with a jump wire.
(3) Insert the power cord plug into the power outlet.
(4) With lock levers (A) (B) on the left and right of the Cassette holder assembly pulled toward the front, slide the holder in the same direction as the cassette insertion direction. (For the positions of lock levers (A) (B), refer to the "Procedures for lowering the Cassette holder assembly" of 1.3 Disassembly/assembly method.)
(5) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

1.6 Jig RCU mode

This unit uses the following two modes for receiving remote control codes.

1) User RCU mode : Ordinary mode for use by the user.
2) Jig RCU mode : Mode for use in production and servicing.

When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). As both of the above two modes are stored in the EEPROM, it is required to set the VCR back to the User RCU mode each time that an adjustment is made or to check that the necessary operations have been completed. These modes can be set by the operations described below.

1.6.1 Setting the Jig RCU mode

(1) Unplug the power cord plug from the power outlet.
(2) Press and hold the "REC" and "PAUSE" buttons on the VCR simultaneously, while plugging the power cord plug into the power outlet.
  When the VCR is set to the Jig RCU mode, the symbols (" : ") in the time display of the FDP are turned off.

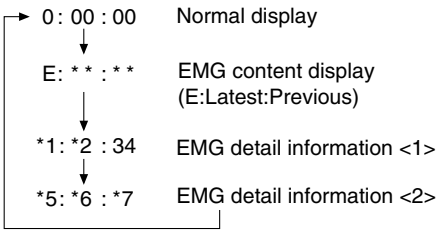
1.6.2 Setting the User RCU mode

(1) Turn off the power.
(2) Press the "REC" and "PAUSE" buttons of the VCR simultaneously. Alternatively, transmit the code "80" from the Jig RCU.

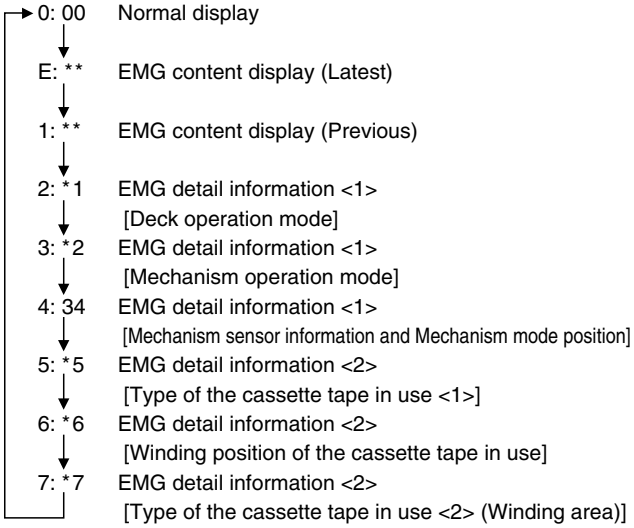
1.7 Emergency display function

This unit has a function for storing the history of the past two emergencies (EMG) and displaying them on each FDP (or OSD). With the status of the VCR and mechanism at the moment an emergency occurred can also be confirmed.

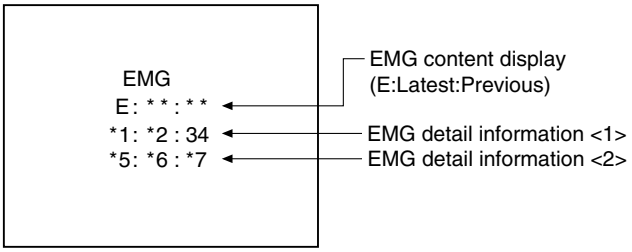
FDP display model
[FDP display]



FDP (7segment LED) display model
[FDP display]



OSD display model
[OSD display]



Notes:

- ***The EMG detail information <1><2> show the information on the latest EMG.***
  It becomes " – – : – – : – –" when there is no latest EMG record.
- ***When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received).***

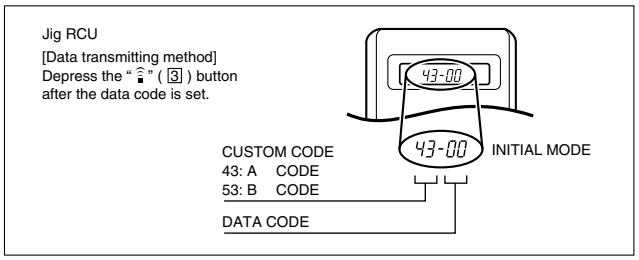


Fig. 1-7a Jig RCU [PTU94023B]

1.7.1 Displaying the EMG information

(1) Transmit the code "59" from the Jig RCU.
The FDP shows the EMG content in the form of "E: * * : * * ".

<Example 1> E : 01 : 03
Previous EMG
Latest EMG

<Example 2> E : – – : – – ← No EMG record

(2) Transmit the code "59" from the Jig RCU again.
The FDP shows the EMG detail information <1> in the form of " *1 : *2 : 34 ".

- *1 : Deck operation mode at the moment of EMG
- *2 : Mechanism operation mode at the moment of EMG
- 3– : Mechanism sensor information at the moment of EMG
- –4 : Mechanism mode position at the moment of EMG

(3) Transmit the code "59" from the Jig RCU once again.
The FDP shows the EMG detail information <2> in the form of " *5 : *6 : *7 ".

- *5 : Type of the cassette tape in use <1> .
- *6 : Winding position of the cassette tape in use
- *7 : Type of the cassette tape in use <2> (Winding area)

(4) Transmit the code "59" from the Jig RCU once again to reset the display.

Notes:

- ***For the OSD display model, all EMG information are showed by transmitting first code from the Jig RCU.***
- ***For the EMG content, see "1.7.3 EMG content description".***
- ***For the EMG detail information <1> , see "1.7.4 EMG detail information <1> ".***
- ***For the EMG detail information <2> , see "1.7.5 EMG detail information <2>".***

1.7.2 Clearing the EMG history

(1) Display the EMG history.
(2) Transmit the code "36" from the Jig RCU.
(3) Reset the EMG display.

(EMG-02e)

1.7.3 EMG content description

Note: ***EMG contents "E08/E09" are for the model with Dynamic Drum (DD).***

FDP	CONTENT	CAUSE
E01: Loading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the loading direction, [E:01] is identified and the power is turned off.	1. The mechanism is locked in the middle of mode transition. 2. The mechanism is locked at the loading end due to the encoder position reading error during mode transition. 3. Power is not supplied to the loading MDA.
E02: Unloading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the unloading direction, [E:02] is identified and the power is turned off.	1. The mechanism is locked in the middle of mode transition. 2. The mechanism is locked at the unloading end due to the encoder position reading error during mode transition. 3. Power is not supplied to the loading MDA.
E03: Take Up Reel Pulse EMG	When the take-up reel pulse has not been generated for more than 4 seconds in the capstan rotating mode, [E:03] is identified, the pinch rollers are turned off and stopped, and the power is turned off. However, the reel EMG is not detected in STILL/SLOW modes.	1. The take-up reel pulse is not generated in the FWD transport modes (PLAY/FWD SEARCH/FF, etc.) because; 1) The idler gear is not meshed with the take-up reel gear; 2) The idler gear is meshed with the take-up reel gear, but incapable of winding due to too large mechanical load (abnormal tension); 3) The take-up reel sensor does not output the FG pulse. 2. The supply reel pulse is not generated in the REV transport modes (REV SEARCH/REW, etc.) because; 1) The idler gear is not meshed with the supply reel gear. 2) The idler gear is meshed with the supply reel gear, but incapable of winding due to too large a mechanical load (abnormal tension); 3) The supply reel sensor does not output the FG pulse. 3. Power is not supplied to the reel sensors.
E04: Drum FG EMG	When the drum FG pulse has not been input for more than 3 seconds in the drum rotating mode, [E:04] is identified, the pinch rollers are turned off and stopped, and the power is turned off.	1. The drum could not start or the drum rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high; 2) The tape is damaged or a foreign object (grease, etc.) adheres to the tape. 2. The drum FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (hall device) of the drum is faulty. 3. The drum control voltage (DRUM CTL V) is not supplied to the MDA. 4. Power is not supplied to the drum MDA.
E05: Cassette Eject EMG	When the eject operation does not complete in 3 seconds after the start, [E:05] is identified, the pinch rollers are turned off and stopped, and the power is turned off. When the cassette insertion operation does not complete in 3 seconds after the start, the cassette is ejected. In addition, when the operation does not complete within 3 seconds after the start, [E:05] is also identified and the power is turned off immediately.	1. The cassette cannot be ejected due to a failure in the drive mechanism of the housing. 2. When the housing load increases during ejection, the loading motor is stopped because of lack of headroom in its drive torque. Housing load increasing factors: Temperature environment (low temperature, etc.), mechanism wear or failure. 3. The sensor/switch for detecting the end of ejection are not functioning normally. 4. The loading motor drive voltage is lower than specified or power is not supplied to the motor (MDA). 5. When the user attempted to eject a cassette, a foreign object (or perhaps the user's hand) was caught in the opening of the housing.
E06: Capstan FG EMG	When the capstan FG pulse has not been generated for more than 1 second in the capstan rotating mode, [E:06] is identified, the pinch rollers are turned off and stopped, and the power is turned off.However, the capstan EMG is not detected in STILL/SLOW/FF/REW modes.	1. The capstan could not start or the capstan rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high (mechanical lock); 2) The tape is damaged or a foreign object (grease, etc.) is adhered to the tape (occurrence of tape entangling, etc.). 2. The capstan FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (MR device) of the capstans is faulty. 3. The capstan control voltage (CAPSTAN CTL V) is not supplied to the MDA. 4. Power is not supplied to the capstan MDA.
E07: SW Power Short-Circuit EMG	When short-circuiting of the SW power supply with GND has lasted for 0.5 second or more, [E:07] is identified, all the motors are stopped and the power is turned off.	1. The SW 5 V power supply circuit is shorted with GND. 2. The SW 12 V power supply circuit is shorted with GND.
E08: DD Initialized (Absolute Position Sensor) EMG	When DD tilting does not complete in 4 seconds, [E:08] is identified, the tilt motor is stopped and the power is turned off.	1. The absolute value sensor is defective. (The soldered parts have separated.) 2. The pull-up resistor at the absolute sensor output is defective. (The soldered parts have separated.) 3. Contact failure or soldering failure of the pins of the connector (board-to-board) to the absolute value sensor. 4. The absolute value sensor data is not sent to the System Controller CPU.
E09: DD FG EMG	When the DD FG pulse is not generated within 2.5 seconds, [E:09] is identified, the tilt motor is stopped and the power is turned off.	1. The FG sensor is defective. (The soldered parts have separated.) 2. The pull-up resistor at the FG sensor output is defective. (The soldered parts have separated.) 3. Contact failure or soldering failure of the pins of the connector (board-to-board) to the FG sensor. 4. The power to the sensor is not supplied. (Connection failure/soldering failure) 5. The FG pulse is not sent to the System Controller CPU. 6. The tilt motor is defective. (The soldered parts have separated.) 7. The drive power to the tilt motor is not supplied. (Connection failure/soldering failure) 8. The tilt motor drive MDA - IC is defective. 9. Auto-recovery of the DD tilting cannot take place due to overrun.
E0A: Supply Reel Pulse EMG	When the supply reel pulse has not been generated for more than 10 seconds in the capstan rotating mode, [E:0A] is identified and the cassette is ejected (but the power is not turned off). However, note that the reel EMG is not detected in the SLOW/STILL mode.	1. The supply reel pulse is not generated in the FWD transport mode (PLAY/FWD SEARCH/FF, etc.) because; 1) PLAY/FWD or SEARCH/FF is started while the tape in the inserted cassette is cut in the middle; 2) A mechanical factor caused tape slack inside and outside the supply reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the FWD transport, so the pulse is not generated until then; 3) The FG pulse output from the supply reel sensor is absent. 2. The take-up reel pulse is not generated in the REV transport mode (REV SEARCH/REW, etc.). 1) REV SEARCH/REW is started when the tape in the inserted cassette has been cut in the middle; 2) A mechanical factor caused tape slack inside and outside the take-up reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the REV transport, so the pulse will not be generated until that time; 3) The FG pulse output from the take-up reel sensor is absent. 3. The power to a reel sensor is not supplied.
EC1 or EU1: Head clog warning	Presupposing the presence of the control pulse output in the PLAY mode, when the value obtained by mixing the two V.FM output channels (without regard to the A.FM output) has remained below a certain threshold level for more than 10 seconds, [E:C1] or [E:U1] is identified and recorded in the emergency history. During the period in which a head clog is detected, the FDP and OSD repeat the "3-second warning display" and "7-second noise picture display" alternately. EMG code : "E:C1" or "E:U1" / FDP : "U:01" / OSD : "Try cleaning tape." or "Use cleaning cassette." The head clog warning is reset when the above-mentioned threshold has been exceeded for more than 2 seconds or the mode is changed to another mode than PLAY.	

Table 1-7-3a

1.7.4 EMG detail information <1>

The status (electrical operation mode) of the VCR and the status (mechanism operation mode/sensor information) of the mechanism in the latest EMG can be confirmed based on the figure in EMG detail information <1> .

[FDP/OSD display]

*1 : *2 : 34

*1 : Deck operation mode at the moment of EMG
*2 : Mechanism operation mode at the moment of EMG
3– : Mechanism sensor information at the moment of EMG
–4 : Mechanism mode position at the moment of EMG

Note:

- ***For EMG detailed information <1>, the content of the code that is shown on the FDP (or OSD) differs depending on the parts number of the system control microprocessor (IC3001) of the VCR. The system control microprocessor parts number starts with two letters, refer these to the corresponding table.***

***1 : Deck operation mode**
[Common table of MN*, HD* and M3*]

Display		Deck operation mode
MN*/M3*	HD*	
00	-	Mechanism being initialized
01	00	STOP with pinch roller pressure off (or tape present with P.OFF)
02	01	STOP with pinch roller pressure on
03	-	POWER OFF as a result of EMG
04	04	PLAY
0C	0E	REC
10	11	Cassette ejected
20	22	FF
21	-	Tape fully loaded, START sensor ON, short FF
22	-	Cassette identification FWD SEARCH before transition to FF (SP x7-speed)
24	26	FWD SEARCH (variable speed) including x2-speed
2C	2E	INSERT REC
40	43	REW
42	-	Cassette identification REV SEARCH before transition to REW (SP x7-speed)
44	47	REV SEARCH (variable speed)
4C	4C	AUDIO DUB
6C	6E	INSERT REC (VIDEO + AUDIO)
84	84	FWD STILL / SLOW
85	85	REV STILL / SLOW
8C	8F	REC PAUSE
8D	-	Back spacing
8E	-	Forward spacing (FWD transport mode with BEST function)
AC	AF	INSERT REC PAUSE
AD	-	INSERT REC back spacing
CC	CD	AUDIO DUB PAUSE
CD	-	AUDIO DUB back spacing
EC	EF	INSERT REC (VIDEO + AUDIO) PAUSE
ED	-	INSERT REC (VIDEO + AUDIO) back spacing

***2 : Mechanism operation mode**
[Common table of MN* and M3*]

Display		Mechanism operation mode
MN*	M3*	
00	00	Command standby (Status without executing command)
02	02	POWER OFF by EMG occurrence
04	04	Moving to the adjacent position in the LOAD direction
06	06	Moving to the adjacent position in the UNLOAD direction
08	08	Cassette ejection being executed / Cassette housing ejection being executed
-	0A	Mode transition to STOP with cassette ejection end
0A	0C	Cassette insertion being executed
0C	0E	Tape being loaded
0E	10	Tape being unloaded
10	12	Mode transition to STOP with pinch roller compression ON
12	14	Mode transition to STOP with pinch roller compression OFF
14	16	Mode transition to STOP with pinch roller compression OFF as a result of POWER OFF
16	18	Mode transition to STOP with pinch roller compression ON as a result of POWER ON
18	1A	Mode transition to PLAY
1A	1C	Mode transition to FWD SEARCH
1C	1E	Mode transition to REC
1E	20	Mode transition to FWD STILL / SLOW
20	22	Mode transition to REV STILL / SLOW
22	24	Mode transition to REV SEARCH
24	26	Mode transition from FF / REW to STOP
26	28	Mode transition to FF
28	2A	Mode transition to REW
2A	2C	4 sec. of REV as a result of END sensor going ON during loading
2C	2E	Short FF / REV as a result of END sensor going ON during unloading
2E	30	Mechanism position being corrected due to overrun
80	80	Mechanism in initial position (Dummy command)

[Table of HD*]

Display	Mechanism operation mode
00	STOP with pinch roller pressure off
01	STOP with pinch roller pressure on
02	U/L STOP (or tape being loaded)
04	PLAY
05	PLAY (x1-speed playback using JOG)
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH
4C	AUDIO DUB
6E	INSERT REC (VIDEO + AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	REC PAUSE
AF	INSERT REC PAUSE
C7	REV SEARCH (x1-speed reverse playback using JOG)
CD	AUDIO DUB PAUSE
EF	INSERT REC (VIDEO + AUDIO) PAUSE
F0	Mechanism being initialized
F1	POWER OFF as a result of EMG
F2	Cassette being inserted
F3	Cassette being ejected
F4	Transition from STOP with pinch roller pressure on to STOP with pinch roller pressure off
F5	Transition from STOP with pinch roller pressure on to PLAY
F6	Transition from STOP with pinch roller pressure on to REC
F7	Cassette type detection SEARCH before FF/REW is being executed
F8	Tape being unloaded
F9	Transition from STOP with pinch roller pressure off to STOP with pinch roller pressure on
FA	Transition from STOP with pinch roller pressure off to FF/REW
FB	Transition from STOP with pinch roller pressure off to REC.P (T.REC,etc.)
FC	Transition from STOP with pinch roller pressure off to cassette type detection SEARCH
FD	Short REV being executed after END sensor on during unloading
FE	Tension loosening being executed after tape loading (STOP with pinch roller pressure on)

3– : Mechanism sensor information
[Common table of MN*, HD* and M3*]

Display	Mechanism sensor information				
	MN* / HD* S-VHS SW	M3* CASS SW	REC safety SW	Start sensor	End sensor
0-	VHS	Cassette insertion	Tab broken	ON	ON
1-	VHS	Cassette insertion	Tab broken	ON	OFF
2-	VHS	Cassette insertion	Tab broken	OFF	ON
3-	VHS	Cassette insertion	Tab broken	OFF	OFF
4-	VHS	Cassette insertion	Tab present	ON	ON
5-	VHS	Cassette insertion	Tab present	ON	OFF
6-	VHS	Cassette insertion	Tab present	OFF	ON
7-	VHS	Cassette insertion	Tab present	OFF	OFF
8-	S-VHS	Cassette ejection	Tab broken	ON	ON
9-	S-VHS	Cassette ejection	Tab broken	ON	OFF
A-	S-VHS	Cassette ejection	Tab broken	OFF	ON
B-	S-VHS	Cassette ejection	Tab broken	OFF	OFF
C-	S-VHS	Cassette ejection	Tab present	ON	ON
D-	S-VHS	Cassette ejection	Tab present	ON	OFF
E-	S-VHS	Cassette ejection	Tab present	OFF	ON
F-	S-VHS	Cassette ejection	Tab present	OFF	OFF

–4 : Mechanism mode position
[Common table of MN*, HD* and M3*]

Display			Mechanism mode position
MN*	HD*	M3*	
-0	-7	-	Initial value
-1	-0	-	EJECT position
-	-	-0	EJECT position (Cassette housing drive mode)
-2	-7	-	Housing operating
-	-	-1	Between EJECT and U / L STOP
-3	-1	-2	U / L STOP position
-	-	-3	Guide arm drive position
-4	-7	-4	Tape being loaded / unloaded (When the pole base is located on the front side of the position just beside the drum)
-5	-2	-5	Tape being loaded / unloaded (When the pole base is located on the rear side of the position just beside the drum)
-6	-7	-6	Pole base compressed position
-7	-3	-F	FF / REW position
-8	-7	-F	Between FF / REW and STOP with pinch roller compression ON
-9	-4	-F	STOP with pinch roller compression OFF
-A	-7	-E	Between STOP with pinch roller compression OFF and REV
-B	-5	-	REV (REV STILL / SLOW) position
-	-	-D	REV position
-	-	-C	Between REV and REV STILL / SLOW
-	-	-B	REV STILL / SLOW position
-C	-7	-	Between REV and FWD
-	-	-A	Between REV STILL / SLOW and FWD STILL / SLOW
-D	-6	-	FWD (FWD STILL / SLOW) position
-	-	-9	FWD STILL / SLOW position
-E	-7	-	Between FWD and PLAY
-	-	-8	Between FWD STILL / SLOW and PLAY
-F	-6	-7	PLAY position

Note:
- ***In the case of the "HD*" microprocessor, as the display is always "-7" at any intermediate position between modes, the position of transitory EMG may sometimes not be located.***

1.7.5 EMG detail information <2>

The type of the cassette tape and the cassette tape winding position can be confirmed based on the figure in EMG detail information <2> .

[FDP/OSD display]

*5 : *6 : *7

*5 : Type of the cassette tape in use <1>
*6 : Winding position of the cassette tape in use
*7 : Type of the cassette tape in use <2> (Winding area)

Note:
- ***EMG detail information <2> is the reference information stored using the remaining tape detection function of the cassette tape. As a result, it may not identify cassette correctly when a special cassette tape is used or when the tape has variable thickness.***

***5 : Cassette tape type <1>**

Display	Cassette tape type <1>
00	Cassette type not identified
16	Large reel/small reel (T-0 to T-15/T-130 to T-210) not classified
82	Small reel, thick tape (T-120) identified/thin tape (T-140) identified
84	Large reel (T-0 to T-60) identified
92	Small reel, thick tape (T-130) identified/thin tape (T-160 to T-210) identified
93	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) not classified
C3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
D3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
E1	C cassette, thick tape (TC-10 to TC-20) identified
E2	Small reel, thick tape (T-0 to T-100) identified
E9	C cassette, thin tape (TC-30 to TC-40) identified
F1	C cassette, thick tape/thin tape (TC-10 to TC-40) not classified

Notes:
- ***Cassette tape type <1> is identified a few times during mode transition and the identification count is variable depending on the cassette tape type. If an EMG occurs in the middle of identification, the cassette tape type may not be able to be identified.***
- ***If other value than those listed in the above table is displayed, the cassette tape type is not identified.***

***6 : Cassette tape winding position**

The cassette tape winding position at the moment of EMG is displayed by dividing the entire tape (from the beginning to the end) in 22 sections using a hex number from “00” to “15”.

“00” : End of winding
“15” : Beginning of winding
“FF or ––” : Tape position not identified

***7 : Cassette tape type <2> (Winding area)**

Display	Cassette tape type <2>	
00	Cassette type not identified	
07	Small reel, thick tape	T-5
08 - 0E	C cassette, thick tape	TC-10
09 - 15	C cassette, thick tape	TC-20P
0A - 0B	Small reel, thick tape	T-20
0A - 16	C cassette, thin tape	TC-30
0A - 16	C cassette, thin tape	TC-40
0D - 0F	Small reel, thick tape	T-40
11 - 14	Small reel, thick tape	T-60
15 - 18	Small reel, thick tape	T-80 / DF-160
17 - 1A	Small reel, thick tape	T-90 / DF-180
19 - 1D	Small reel, thick tape	T-100
1D - 21	Small reel, thick tape	T-120 / DF-240
1E - 1F	Small reel, thin tape	T-140
1F - 23	Small reel, thick tape	T-130
21 - 23	Small reel, thin tape	T-160
21 - 23	Small reel, thin tape	T-168
22 - 24	Small reel, thick tape	DF-300
22 - 24	Small reel, thin tape	T-180 / DF-360
22 - 24	Small reel, thin tape	T-210 / DF-420
22 - 23	Large reel	T-5
23 - 24	Large reel	T-10
25 - 26	Large reel	T-20
27 - 29	Large reel	T-30
29 - 2B	Large reel	T-40
2D - 2F	Large reel	T-60

Note:
- ***The values of cassette tape type <2> in the above table are typical values with representative cassette tapes.***

SECTION 2
MECHANISM ADJUSTMENT

2.1 Before starting repair and adjustment

2.1.1 Precautions

(1) Unplug the power cord plug of the VCR before using your soldering iron.
(2) Take care not to cause any damage to the conductor wires when plugging and unplugging the connectors.
(3) Do not randomly handle the parts without identifying where the trouble is.
(4) Exercise enough care not to damage the lugs, etc. during the repair work.
(5) When reattaching the front panel assembly, make sure that the door opener of the cassette holder assembly is lowered in position prior to the reinstallation. (See SECTION 1 DISASSEMBLY.)
(6) When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)

2.1.2 Checking for proper mechanical operations

Enter the mechanism service mode when you want to operate the mechanism when no cassette is loaded. (See SECTION 1 DISASSEMBLY.)

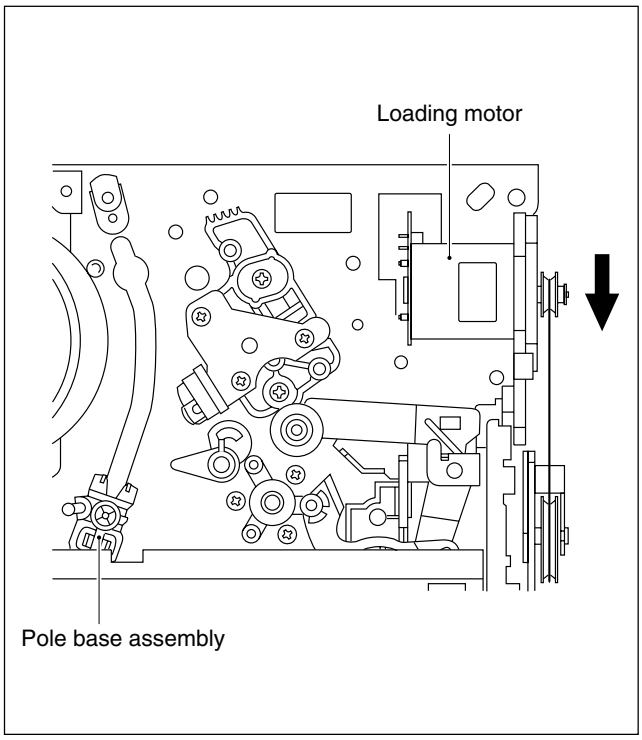


Fig. 2-1-3a

2.1.3 Manually removing the cassette tape

1. In case of electrical failures

If you cannot remove the cassette tape which is loaded because of any electrical failure, manually remove it by taking the following steps.

(1) Unplug the power cord plug from the power outlet.
(2) Refer to the disassembly procedure and perform the disassembly of the major parts before removing the drum assembly.
(3) Unload the pole base assembly by manually turning the loading motor of the mechanism assembly toward the front. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.2-1-3a.)
(4) Bring the pole base assembly to a pause when it reaches the position where it is hidden behind the cassette tape.
(5) Move the top guide toward the drum while holding down the lug (A) of the bracket retaining the top guide. Likewise hold part (B) down and remove the top guide.
Section (C) of the top guide is then brought under the cassette lid. Then remove the top guide by pressing the whole cassette tape down. (See Fig.2-1-3b.)
(6) Remove the cassette tape by holding both the slackened tape and the cassette lid.
(7) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

Note:

- ***For the disassembly procedure of the major parts and details of the precautions to be taken, see "SECTION 1 DISASSEMBLY".***

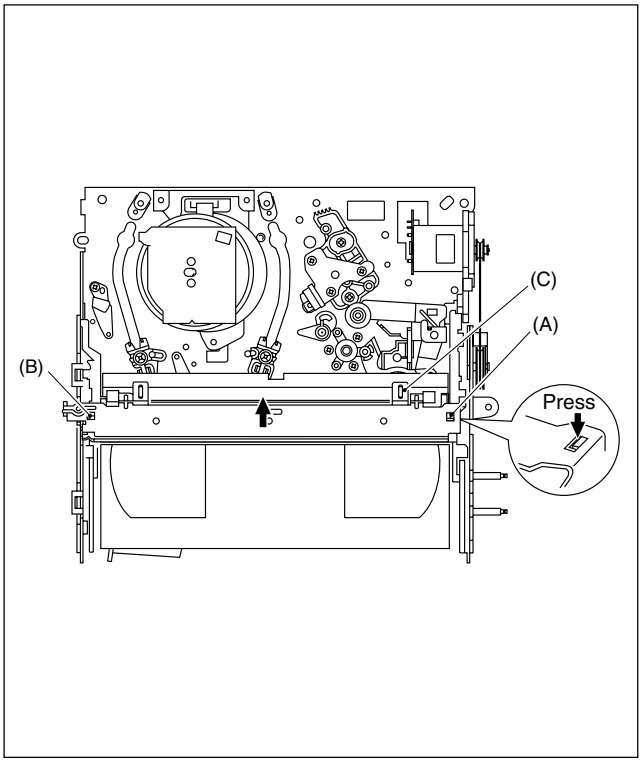


Fig. 2-1-3b

2. In case of mechanical failure

If you cannot remove the cassette tape which is loaded because of any mechanical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, front panel assembly and others so that the mechanism assembly is visible. (See SECTION 1 DASASSEMBLY.)
(2) While keeping the tension arm assembly of the mechanism assembly free from tension, pull the tape on the pole base assembly (supply or take-up side) out of the guide roller. (See Fig.2-1-3c.)
(3) Take the spring of the pinch roller arm assembly off the hook of the press lever assembly, and detach it from the tape. (See Fig.2-1-3d.)
(4) In the same way as in the electrical failure instructions in 2.1.3-1(5), remove the top guide.
(5) Raise the cassette tape cover. By keeping it in that position, draw out the cassette tape case from the cassette holder and take out the tape.
(6) By hanging the pinch roller arm assembly spring back on the hook, take up the slack of the tape into the cassette.

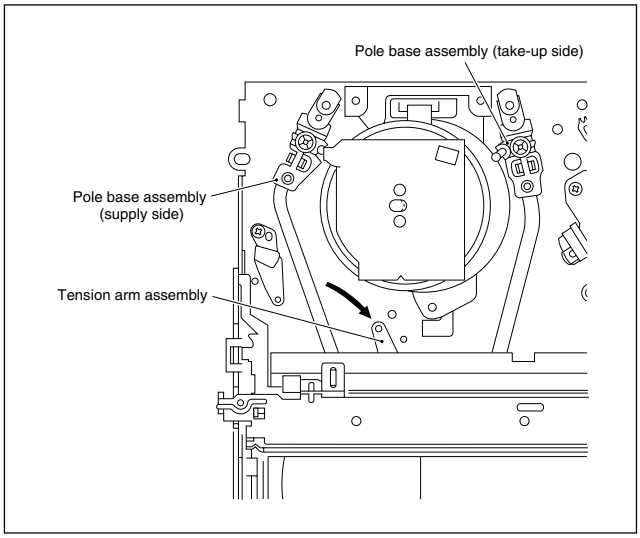


Fig. 2-1-3c

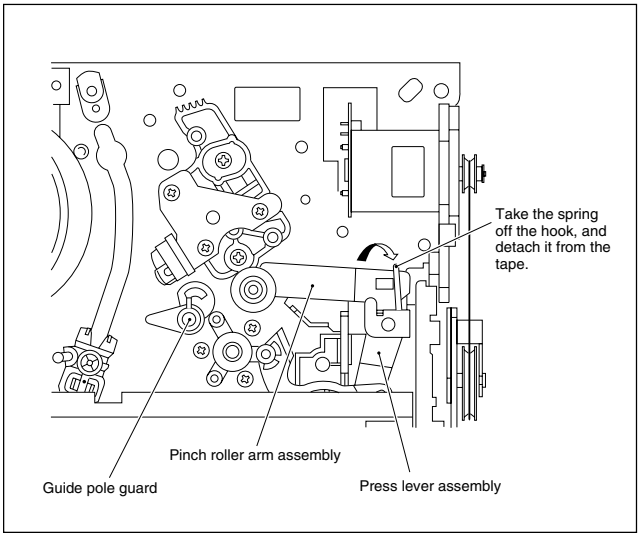
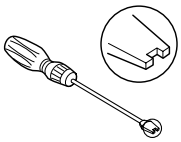
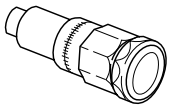
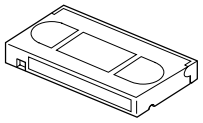
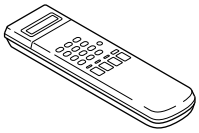
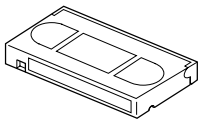
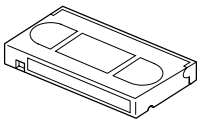


Fig. 2-1-3d

2.1.4 Jigs and tools required for adjustment

Roller driver PTU94002	A/C head positioning tool PTU94010	Torque gauge PUJ48075-2
		
Back tension cassette gauge PUJ48076-2	Jig RCU PTU94023B	
		
Alignment tape (SP, stairstep, NTSC) MHP	Alignment tape (EP, stairstep, NTSC) MHP-L	
		

2.1.5 Maintenance and inspection

1. Location of major mechanical parts

In this chapter, the two mechanism speeds are described by comparing the speeds of the standard type and the high-speed FF/REW type.
It is possible to distinguish between these two types of mechanism by the diameters of their capstan pulleys.
The capstan pulley diameter for the standard type is approx. 32 mm.
The capstan pulley diameter for the high-speed FF/REW type is approx. 43 mm.
For information on the different parts used in the two mechanism types, please refer to the “Replacement of major parts”.

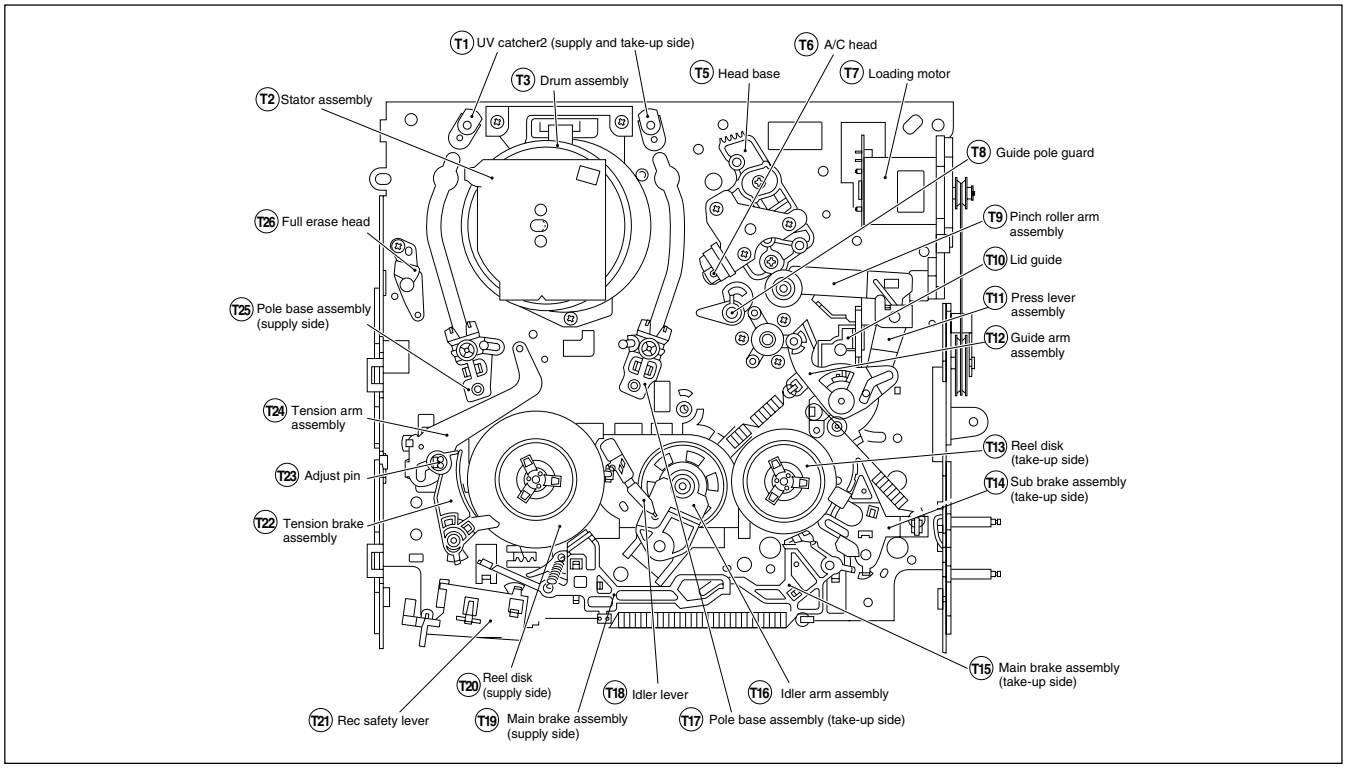

T1 UV catcher2 (supply and take-up side)
T2 Stator assembly
T3 Drum assembly
T5 Head base
T6 A/C head
T7 Loading motor
T8 Guide pole guard
T9 Pinch roller arm assembly
T10 Lid guide
T11 Press lever assembly
T12 Guide arm assembly
T13 Reel disk (take-up side)
T14 Sub brake assembly (take-up side)
T15 Main brake assembly (take-up side)
T16 Idler arm assembly
T17 Pole base assembly (take-up side)
T18 Idler lever
T19 Main brake assembly (supply side)
T20 Reel disk (supply side)
T21 Rec safety lever
T22 Tension brake assembly
T23 Adjust pin
T24 Tension arm assembly
T25 Pole base assembly (supply side)
T26 Full erase head

Fig. 2-1-5a Mechanism assembly top side

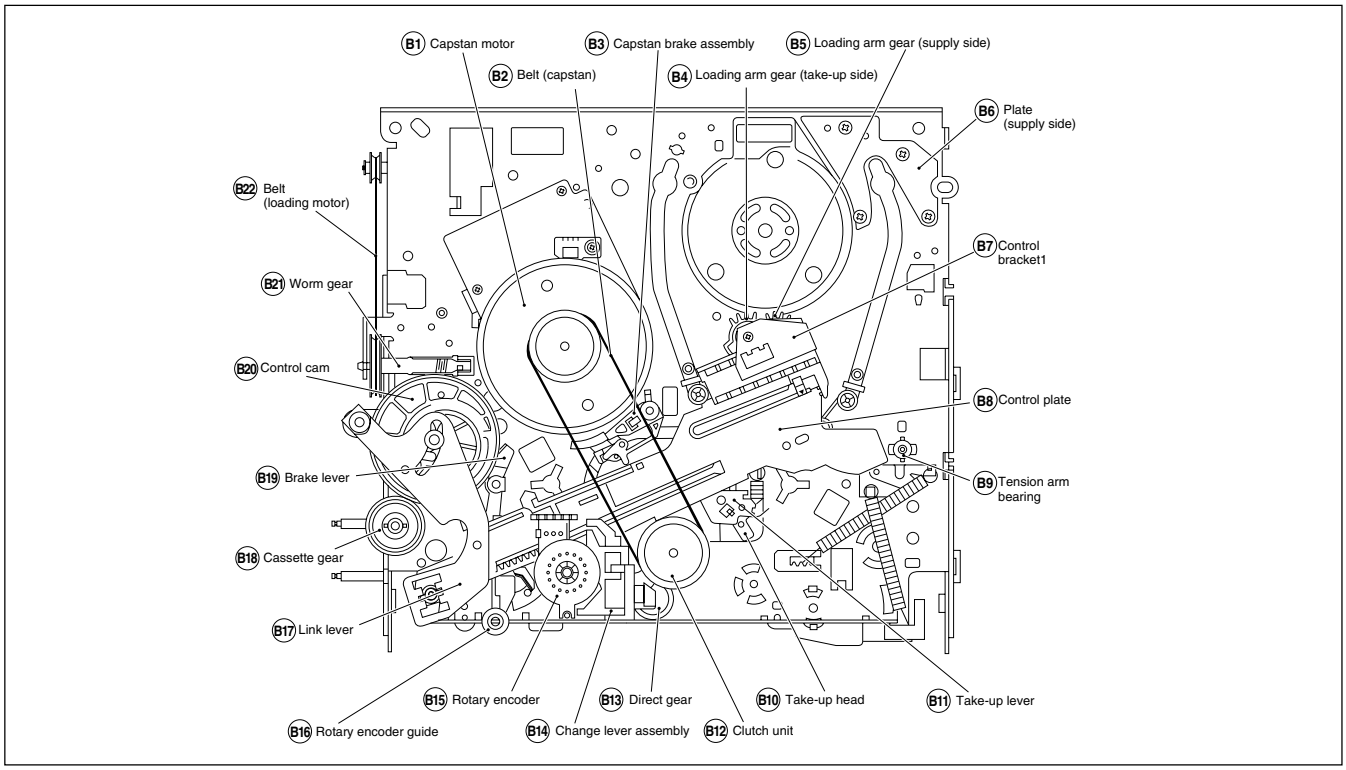


Fig. 2-1-5b Mechanism assembly bottom side

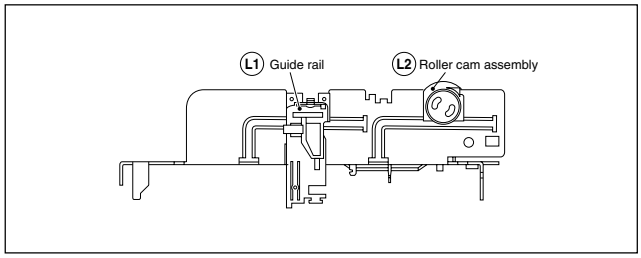


Fig. 2-1-5c Mechanism assembly left side

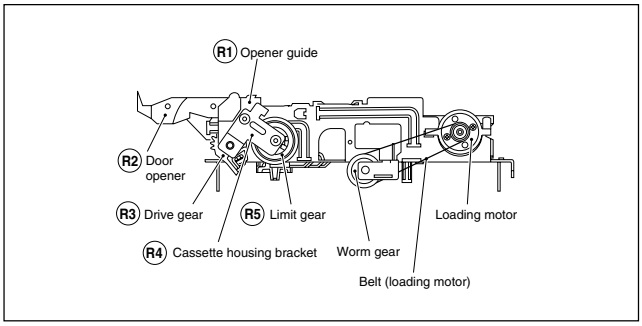


Fig. 2-1-5d Mechanism assembly right side

2. Cleaning

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced.

When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

(1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth or Kimu-wipe with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.

Note:

- ***Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.***

(2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.

(3) After cleaning, make sure that the cleaned parts are completely dry before using the video tape.

3. Lubrication

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

Note:

- ***See the "mechanism assembly" diagram of the parts list for the lubricating or greasing spots, and for the types of oil or grease to be used.***

4. Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning,lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions.However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time,even if the set is not used.

System	Parts Name	Operation Hours	
		~1000H	~2000H
Tape transport	Upper drum assembly	★○	○
	A/C head	★○	★○
	Lower drum assembly	★	★○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Capstan motor (Shaft)	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Capstan brake assembly		○
	Main brake assembly		○
	Belt (Capstan)	○	○
	Belt (Loading motor)		○
	Loading motor		○
	Clutch unit		○
	Worm gear		○
	Control plate		○
Other	Brush	★○	★○
	Tension brake assembly	○	○
	Rotary encoder		○

★ : Cleaning

○ : Inspection or replacement if necessary

Table 2-1-5a

5. Disassembling procedure table

The following table indicates the order in which parts are removed for replacement. To replace parts, remove them in the order of 1 to 18 as shown in the table. To install them, reverse the removal sequence.

The symbols and numbers preceding the individual part names represent the numbers in the "Location of major mechanical parts" table. Also, the "T", "B", and "T/B" on the right of each part name shows that the particular part is removed from the front, from the back, and from both sides of the mechanism, respectively.

Symbols and numbers	Removal parts / (Reference items) Replacement parts	Front (T)/Back (B) of mechanism	Number of removal steps	L1 Guide rail	L2 Roller cam assembly	R4 Cassette housing bracket	R1 Opener guide	— Relay gear	— Cassette holder assembly	R3 Drive gear	— Drive arm	T9 Pinch roller arm assembly	T12 Guide arm assembly	T11 Press lever assembly	T1 UV catcher2	B15 Rotary encoder	B12 Clutch unit	B14 Change lever assembly	B13 Direct gear	— Coupling gear	B17 Link lever	B21 Worm gear	B7 Control bracket1	B8 Control plate	B5 Loading arm gear (supply side)	B4 Loading arm gear (take-up side)	B11 Take-up lever	T14 Sub brake assembly (take-up side)	T15 Main brake assembly (take-up side)	T13 Reel disk (take-up side)	T22 Tension brake assembly	T24 Tension arm assembly	T18 Idler lever	B19 Brake lever (*1)
L1	2.2.3 Guide rail	T	1																															
L2	2.2.3 Roller cam assembly	T	1																															
R4	2.2.3 Cassette housing bracket	T	1																															
R1	2.2.3 Opener guide	T	2			1																												
R2	2.2.3 Door opener	T	3			1	2																											
—	2.2.3 Relay gear	T	3			1	2																											
R5	2.2.3 Limit gear	T	3			1	2																											
—	2.2.3 Cassette holder assembly	T	6	1	2	3	4	5																										
R3	2.2.3 Drive gear	T	4			1	2	3																										
—	2.2.3 Drive arm	T	8	1	2	3	4	5	6	7																								
T9	2.2.4 Pinch roller arm assembly	T	1																															
T12	2.2.5 Guide arm assembly	T	1																															
T11	2.2.5 Press lever assembly	T	3									1	2																					
T6	2.2.6 A/C head	T	1																															
T7	2.2.7 Loading motor	T	1																															
B1	2.2.8 Capstan motor	T/B	1																															
T1	2.2.9 UV catcher2	T	1																															
T17	2.2.9 Pole base assembly (take-up side)	T/B	2												1																			
T25	2.2.9 Pole base assembly (supply side)	T/B	2												1																			
B15	2.2.10 Rotary encoder	B	1																															
B12	2.2.11 Clutch unit	B	1																															
B14	2.2.12 Change lever assembly	B	3													1	2																	
B13	2.2.12 Direct gear	B	4													1	2	3																
—	2.2.12 Coupling gear	B	5													1	2	3	4															
—	2.2.12 Clutch gear	B	6													1	2	3	4	5														
B17	2.2.13 Link lever	B	1																															
B18	2.2.14 Cassette gear	B	2																		1													
B20	2.2.14 Control cam	B	2																		1													
B21	2.2.14 Worm gear	B	1																															
T10	- Lid guide	T/B	5									1	2	3								4												
B7	2.2.15 Control bracket1	B	1																															
B8	2.2.15 Control plate	B	6													1	2	3			4		5											
B5	2.2.16 Loading arm gear (supply side)	B	7													1	2	3			4		5	6										
B4	2.2.16 Loading arm gear (take-up side)	B	8													1	2	3			4		5	6	7									
—	2.2.16 Loading arm gear shaft	B	9													1	2	3			4		5	6	7	8								
B11	2.2.17 Take-up lever	T/B	7													1	2	3			4		5	6										
B10	2.2.17 Take-up head	T/B	8													1	2	3			4		5	6			7							
—	2.2.17 Control plate guide	T/B	8													1	2	3			4		5	6			7							
B3	2.2.18 Capstan brake assembly	T/B	7													1	2	3			4		5	6										
T14	2.2.19 Sub brake assembly(take-up side)	T/B	15	1	2	3	4	5	6	7	8					9	10	11			12		13	14										
T15	2.2.20 Main brake assembly(take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15						
T19	2.2.20 Main brake assembly(supply side)	T/B	9	1	2	3	4	5	6	7	8																							
T13	2.2.20 Reel disk (take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15						
T22	2.2.21 Tension brake assembly	T/B	9	1	2	3	4	5	6	7	8																							
T20	2.2.21 Reel disk (supply side)	T/B	10	1	2	3	4	5	6	7	8																					9		
T24	2.2.21 Tension arm assembly	T/B	10	1	2	3	4	5	6	7	8																					9		
B9	2.2.21 Tension arm bearing	T/B	10	1	2	3	4	5	6	7	8																					9		
T18	2.2.22 Idler lever	T/B	17	1	2	3	4	5	6	7	8					9	10	11			12		13	14								15	16	
T16	2.2.22 Idler arm assembly	T/B	18	1	2	3	4	5	6	7	8					9	10	11			12		13	14								15	16	17
B19	- Brake lever (*1)	T/B	18	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15	16	17				
B16	- Rotary encoder guide	T/B	19	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15	16	17				18

Table 2-1-5b

Note:

- ***The parts with marked (∗) have different types of mechanisms (standard type or high-speed FF/REW type).***
  - ***∗1 : Uses the standard type mechanism only.***
  - ***∗2 : Uses the high-speed FF/REW type mechanism only.***

2.2 Replacement of major parts

2.2.1 Before starting disassembling (Phase matching between mechanical parts)

The mechanism of this unit is closely linked with the rotary encoder and system controller circuits.
Since the system controller detects the status of mechanical operation in response to phases of the rotary encoder (internal switch positions), the mechanism may not operate properly unless such parts as the rotary encoder, control plate, loading arm gear, control cam, cassette gear, limit gear, relay gear and drive gear are installed in their correct positions.
Especially, this model is not provided with any cassette housing assembly, so that cassette loading and unloading must be accomplished by operation of the cassette holder assembly. The latter is in turn driven by such parts as the drive gear, relay gear and limit gear. Exercise enough care, therefore, to have the phases of all this gear matching one another. (For information on phase matching of the mechanism, see the instructions on how to install individual parts.)
This unit is provided with a mechanism assembly mode. It is therefore necessary to enter this mode for assembling and disassembling procedures.
This mode is usually not in use, manually set it when it is required.

2.2.2 How to set the "Mechanism assembling mode"

Remove the mechanism assembly and place it bottom side up. (See SECTION 1 DISASSEMBLY.) Turn the worm gear toward the front so that the guide hole of the control cam is brought into alignment with the hole at the mechanism assembly chassis. This position renders the mechanism assembling mode operational. Make sure that the control plate is located in alignment with the mark E. (See Fig.2-2-2a.)

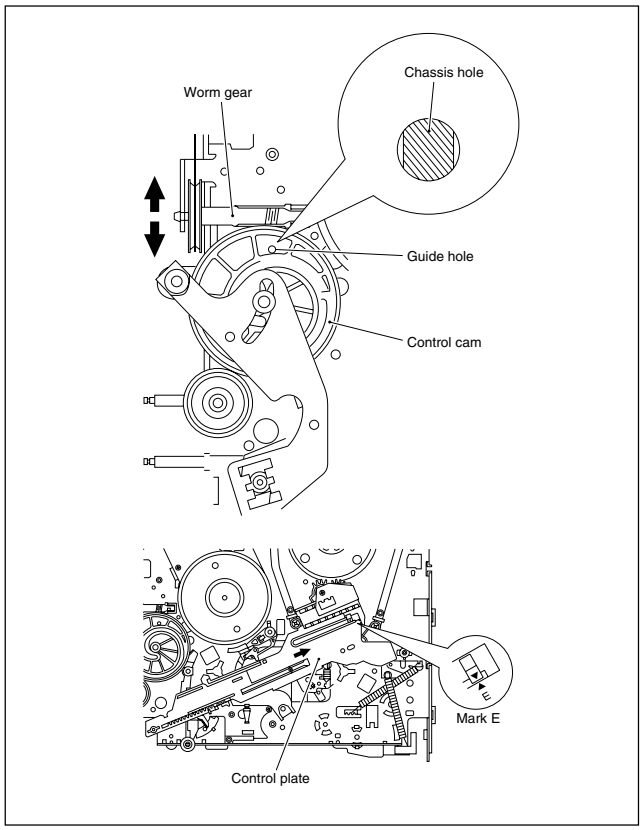


Fig. 2-2-2a

2.2.3 Cassette holder assembly

1. How to remove

(1) Remove the guide rail and roller cam assembly. (See Fig.2-2-3a.)
(3 lugs on the guide rail and one lug on the roller cam assembly)

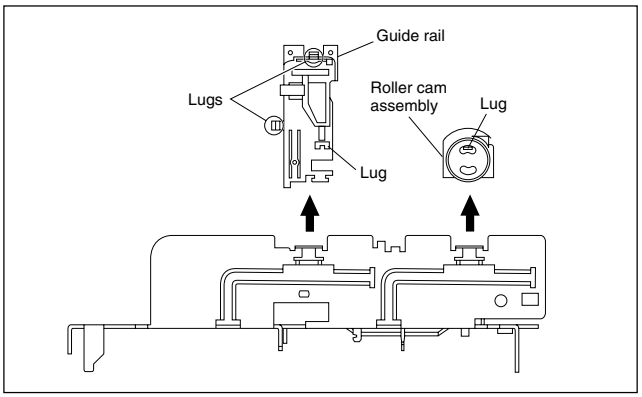


Fig. 2-2-3a

(2) Remove the two slit washers and remove the cassette housing bracket. (See Fig.2-2-3b.)
(3) Remove the opener guide, spring(A), door opener, relay gear and limit gear. (See Fig.2-2-3b.)

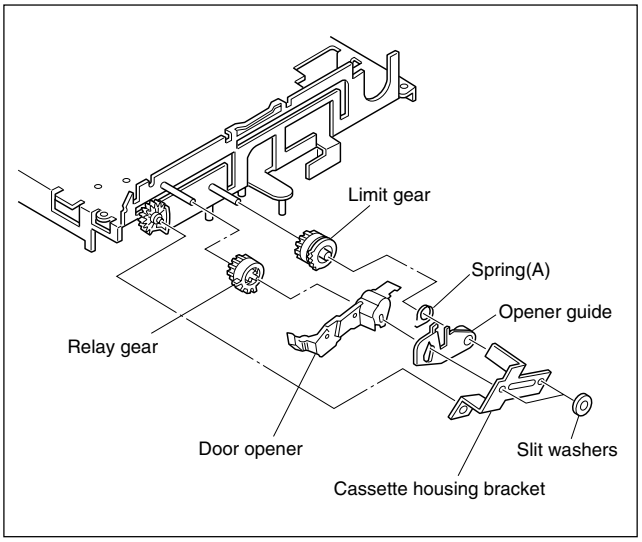


Fig. 2-2-3b

(4) While swinging the lock levers (R) and (L) of the cassette holder assembly toward the front, slide the cassette holder assembly until its legs come to where the guide rail and the roller cam assembly have been removed (so that the drive arm is upright). (See Fig.2-2-3c.)

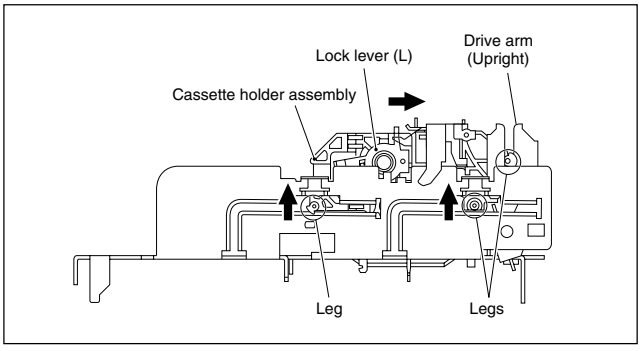


Fig. 2-2-3c

(5) While holding the left side of the cassette holder, lift the cassette holder assembly so that the three legs on the left side are all released. Then pull the legs (A) and (B) on the right side out of the rail and also pull up the leg(C). (See Fig.2-2-3d and Fig.2-2-3e.)
(6) Draw out the drive gear, and remove the drive arm.

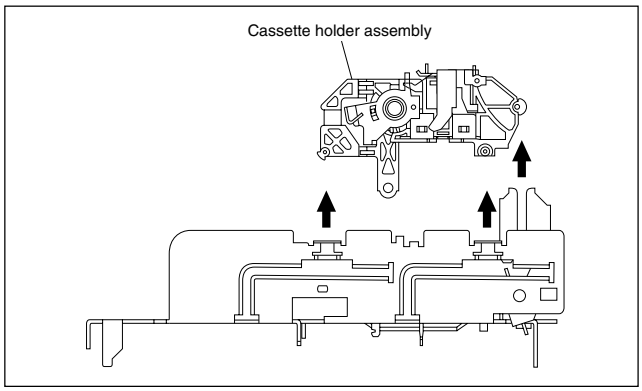


Fig. 2-2-3d

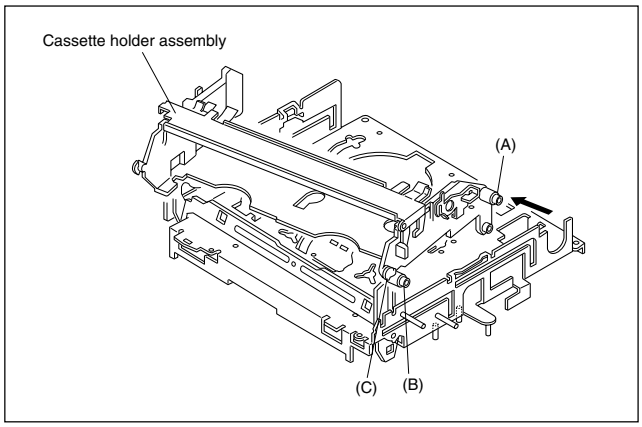


Fig. 2-2-3e

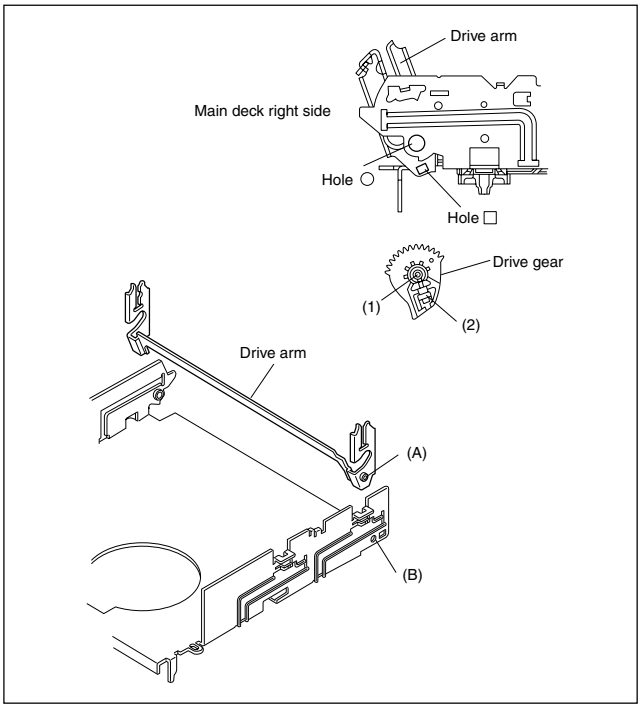


Fig. 2-2-3f

2. How to install (Phase matching)
(1) Insert the section (A) of the drive arm into the section (B) of the main deck.
(2) Insert the section (1) of the drive gear into the round hole, and the section (2) into the square hole on the drive arm. (See Fig.2-2-3f.)
(3) Hold the drive arm upright and fit the leg (C) on the right side of the cassette holder assembly into the groove. (See Fig.2-2-3g.)
(4) While swinging the lock lever (R) of the cassette holder assembly toward the front, put the legs (A) and (B) into the rail. (See Fig.2-2-3g.)
(5) Drop the three legs on the left side of the cassette holder assembly into the groove at one time. (See Fig.2-2-3h.)
(6) Slide the whole cassette holder assembly toward the front to bring it to the eject end position.
(7) Install the limit gear so that the notch on the outer circumference of the limit gear is brought into alignment with the guide hole on the main deck. (See Fig.2-2-3i.)
(8) Install so that the notch on the periphery of the relay gear is aligned with the notch of the main deck and that hole A of the relay gear is aligned with the hole A of the limit gear and that hole B of the relay gear is aligned with the hole B of the drive gear. (See Fig.2-2-3i.)
(9) Install the door opener, opener guide, spring(A) and cassette housing bracket and fasten the two slit washers.

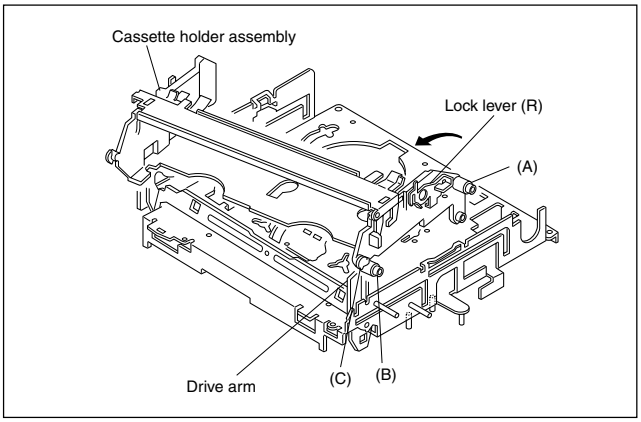


Fig. 2-2-3g

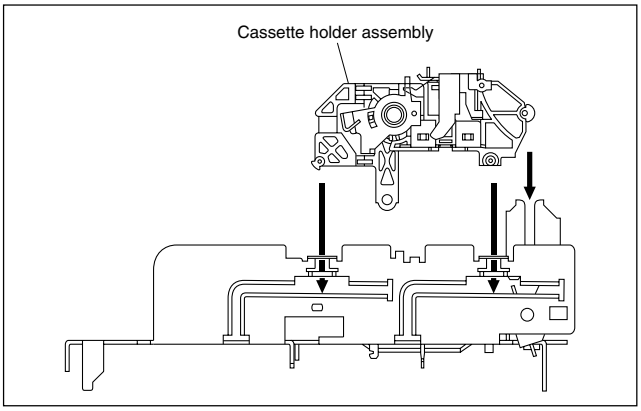


Fig. 2-2-3h

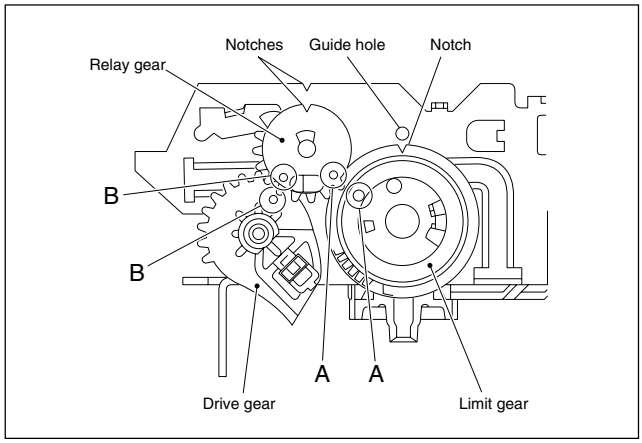


Fig. 2-2-3i

2.2.4 Pinch roller arm assembly

1. How to remove

(1) Remove the spring from the hook of the press lever assembly.
(2) Remove the slit washer and remove the pinch roller seat 2. (See Fig.2-2-4a.)
(3) Remove the pinch roller arm assembly by pulling it up.

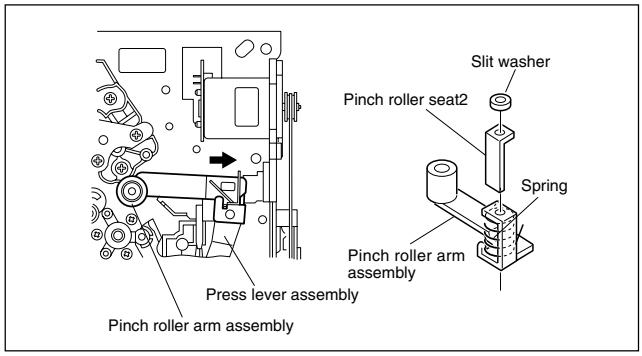


Fig. 2-2-4a

2.2.5 Guide arm assembly and press lever assembly

1. How to remove

(1) Remove the spring and expand the lug of the lid guide in the arrow-indicated direction. Then remove the guide arm assembly by pulling it up.
(2) Remove the press lever assembly by pulling it up. (See Fig.2-2-5a.)

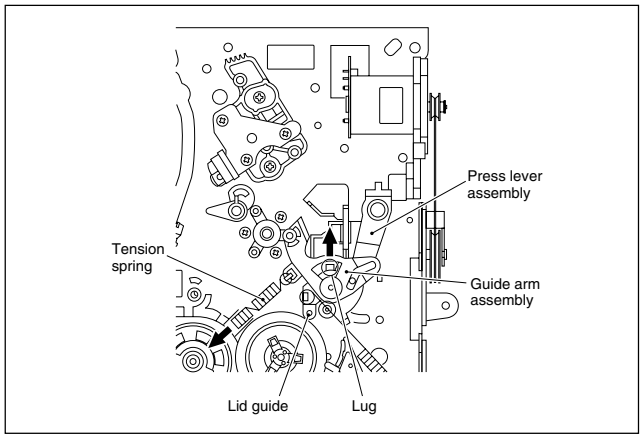


Fig. 2-2-5a

2.2.6 A/C head

1. How to remove

(1) Remove the two screws (A) and remove the A/C head together with the head base.
(2) When replacing only the A/C head, remove the three screws (B) while controlling the compression spring.

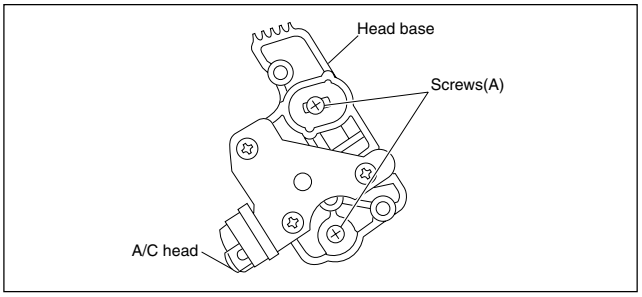


Fig. 2-2-6a

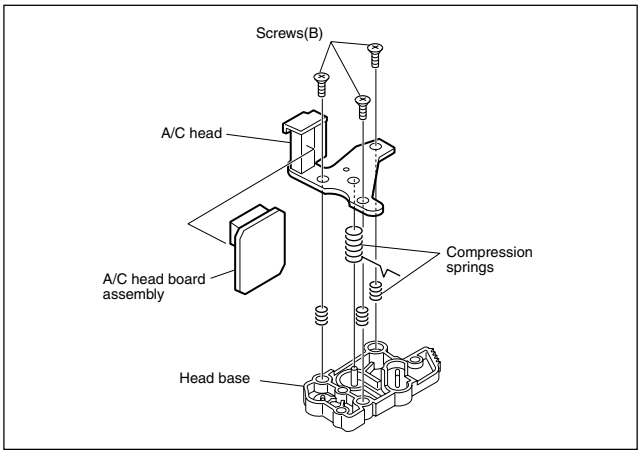


Fig. 2-2-6b

2. How to install

(1) To make the post-installation adjustment easier, set the temporary level as indicated in Fig.2-2-6c. Also make sure that the screw center (centre) is brought into alignment with the center (centre) position of the slot.

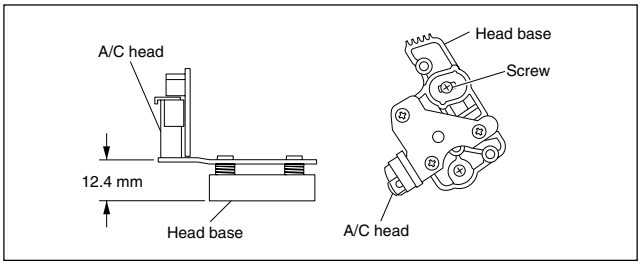


Fig. 2-2-6c

2.2.7 Loading motor

1. How to remove

(1) Remove the belt wound around the worm gear.
(2) Open the two lugs of the motor guide and remove the loading motor, loading motor board assembly and motor guide altogether by pulling them up.
(3) When replacing the loading motor board assembly, take care with the orientation of the loading motor. (Install so that the loading motor label faces upward.)
(4) When the motor pulley has been replaced, choose the fitting dimension as indicated in Fig.2-2-7a.

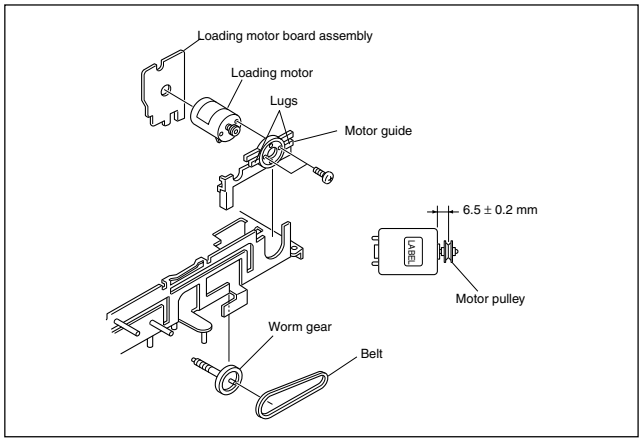


Fig. 2-2-7a

2.2.8 Capstan motor

1. How to remove

(1) Remove the belt (capstan) on the mechanism assembly back side.
(2) Remove the three screws (A) and remove the capstan motor.

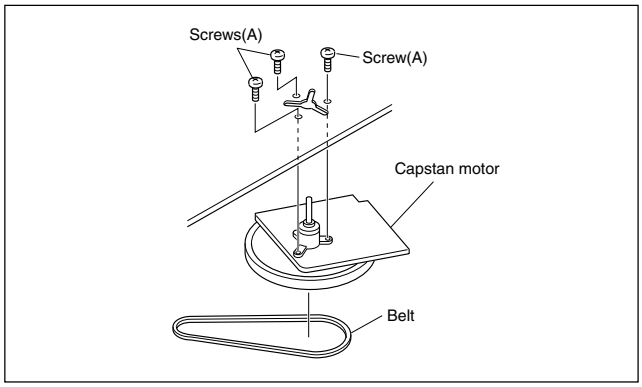


Fig. 2-2-8a

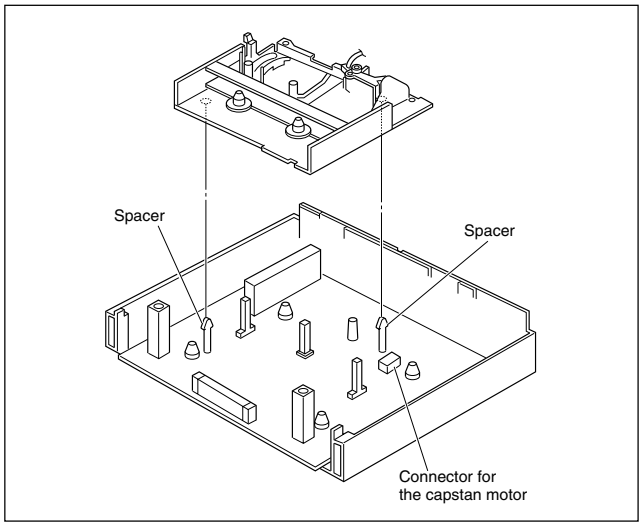


Fig. 2-2-8b

2. How to install (Centering the mounting position)

When the capstan motor has once been removed and then reinstalled out of the initial correct position in the rotational direction, the capstan motor current may be unstable during operation in high or low temperatures. This may result in greater Wow & Flutter and occasionally in power breakdown because of current over - load. Install the capstan motor while following the procedure given below.
(The capstan motor is centrally located when the unit is shipped from the factory.)

(1) Provisionally tighten the three screws (A) securing the capstan motor.
(2) Install the mechanism assembly to which the capstan motor is provisionally fastened on the bottom chassis which incorporates the Main board assembly. (No need to tighten the screws for mounting the mechanism.)
Make sure that all the connectors for the mechanism assembly and the Main board assembly are correctly installed as indicated in Fig. 2-2-8b.
(3) Making sure that the connector for the capstan motor is correctly mounted, and securely tighten the three screws (A).

Note:

- ***When the capstan motor has been replaced with a new one, perform recording in the EP(or LP) mode for at least 2 minutes at normal temperatures immediately before starting the FF/REW or SEARCH operations (Aging).***

2.2.9 Pole base assembly (supply or take-up side)

1. How to remove

(1) Remove the UV catcher 2 on the removal side by loosening the screw (A).
(2) Remove the pole base assembly on the supply side from the mechanism assembly by loosening the screw (B) on the mechanism assembly back side and sliding the pole base assembly toward the UV catcher 2.
(3) As for the pole base assembly on the take-up side, turn the pulley of the loading motor to lower the cassette holder because the screw (B) is hidden under the control plate. (See the “Procedures for Lowering the Cassette holder assembly” of 1.3 DISASSEMBLY/ASSEMBLY METHOD.) Further turn the motor pulley to move the cassette holder until the screw (B) is no longer under the control plate (in the half-loading position). Then remove it as done for the supply side by removing the screw (B).

Note:

- ***After reinstalling the Pole base assembly and the UV catcher2, be sure to perform compatibility adjustment.***

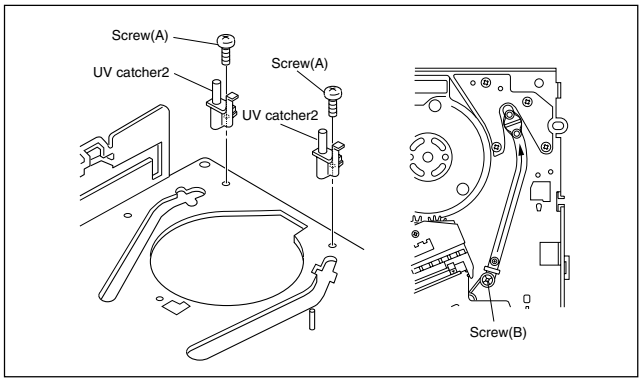


Fig. 2-2-9a

2.2.10 Rotary encoder

1. How to remove

(1) Remove the screw (A) and remove the rotary encoder by pulling it up. (See Fig. 2-2-10a.)

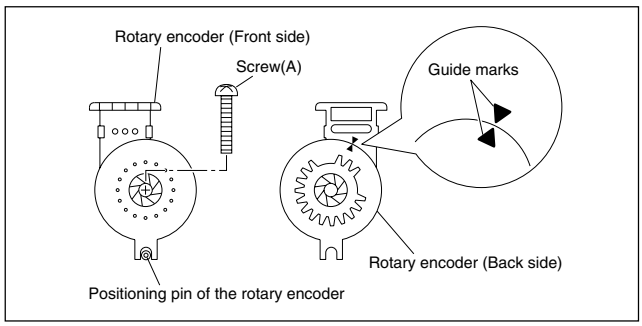


Fig. 2-2-10a

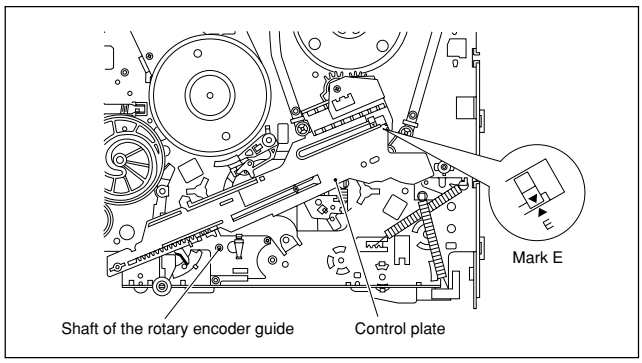


Fig. 2-2-10b

2. How to install (Phase matching)

(1) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft and bring the guide marks on the rotary encoder into alignment as indicated in Fig.2-2-10a. (See Fig. 2-2-10a and Fig. 2-2-10b.)

(2) Turn over the rotary encoder with its guide marks kept in alignment and install it by fitting on the shaft of the rotary encoder guide and the positioning pin.

(3) Tighten the screw (A) to complete the installation.

2.2.11 Clutch unit

(1) Remove the belt wound around the capstan motor and the clutch unit.

(2) Remove the slit washer and remove the clutch unit.

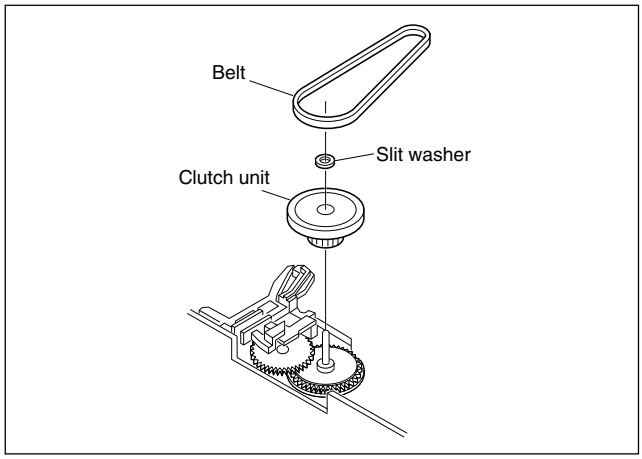


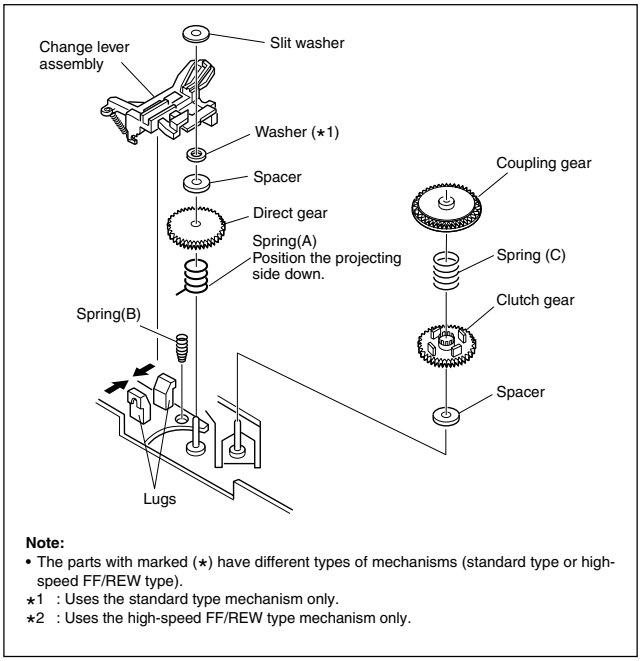
Fig. 2-2-11a

2.2.12 Change lever assembly, direct gear, clutch gear and coupling gear

1. How to remove

(1) Release the two lugs of the rotary encoder guide in the arrow-indicated direction and remove the change lever assembly.

(2) Remove the slit washer retaining the direct gear and remove the latter.
Take care so as not to lose the washer and spring. (See Fig.2-2-12a.)



Note:
- The parts with marked (*) have different types of mechanisms (standard type or high-speed FF/REW type).

*1 : Uses the standard type mechanism only.
*2 : Uses the high-speed FF/REW type mechanism only.

Fig. 2-2-12a

2. How to install

(1) Install the clutch gear, spring (A), spring (C), direct gear, spacer and others to the individual shafts of the main deck, and finally the slit washer. (See Fig.2-2-12a.)

(2) Let the spring (B) drops into the rotary encoder guide hole and install the change lever assembly.(Take care not to mistake a direction of the spring.) The point is to slightly lift the coupling gear and catch it from the both sides with the assembly. (See Fig.2-2-12b.)

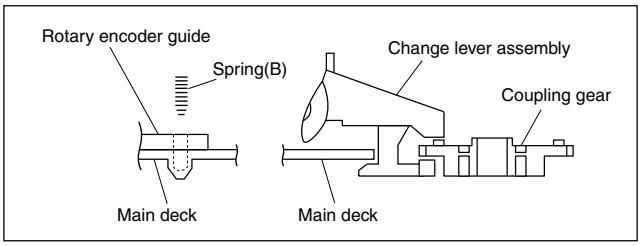


Fig. 2-2-12b

2.2.13 Link lever

1. How to remove

(1) Remove the two slit washers.
(2) Remove the link lever by lifting it from the shaft retained by the slit washers. Then swing the link lever counterclockwise and remove it from the locking section of the control plate.

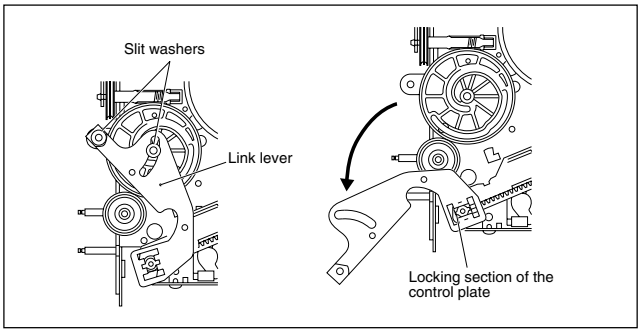


Fig. 2-2-13a

2. How to install (Phase matching)

(1) Slide the control plate so that its mark E is aligned with the mark ▼ on the loading arm gear shaft. (See Fig.2-2-13b.)
(2) Rotate the worm gear until the guide hole of the control cam is aligned exactly with the guide hole of the main deck. (See Fig.2-2-13c.)
(3) Insert the link lever into the locking section of the control plate. (See Fig.2-2-13a.)
(4) Rotate the link lever clockwise so that it is installed on the shafts in the center (centre) and on the left of the control cam.
(5) Fasten the slit washers at these two points.

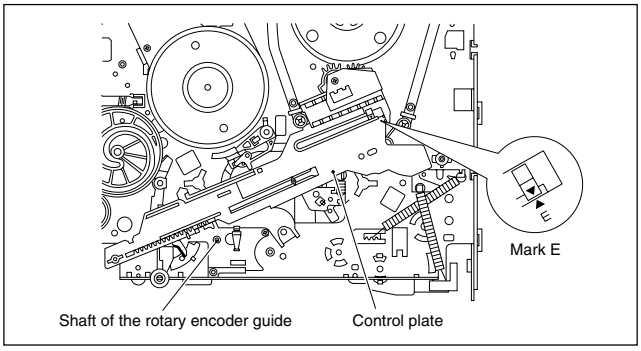


Fig. 2-2-13b

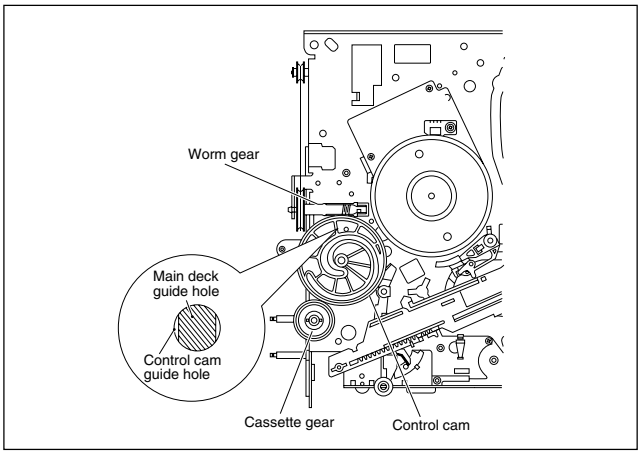


Fig. 2-2-13c

2.2.14 Cassette gear, control cam and worm gear

1. How to remove

(1) Remove the control cam by lifting it.
(2) Open the two lugs of the cassette gear outward and pull the latter off.
(3) Remove the belt wound around the worm gear and the loading motor.
(4) Open the lug of the lid guide outward and remove the worm gear.

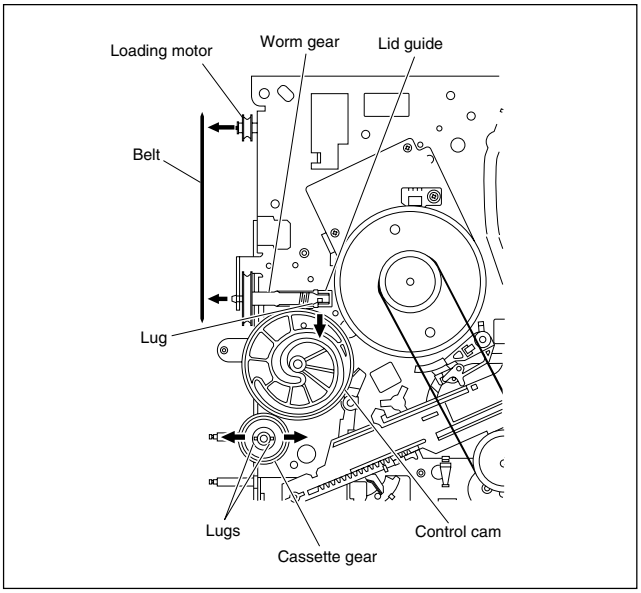


Fig. 2-2-14a

2.2.15 Control plate

1. How to remove

(1) Remove the screw (A) retaining the control bracket 1 and remove the latter.
(2) Slide the control plate as indicated by the arrow and remove the control plate. (See Fig.2-2-15a.)

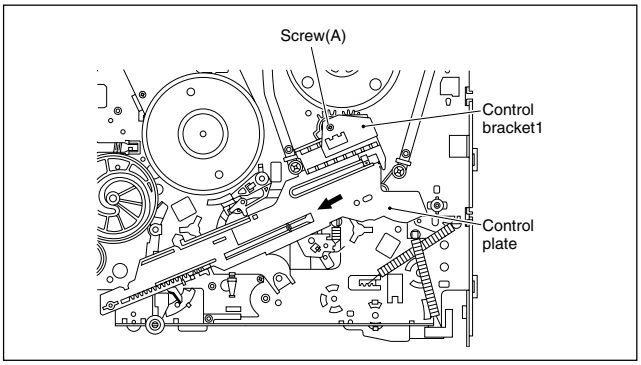


Fig. 2-2-15a

2. How to install (Phase matching)

(1) Adjust the position of the idler arm assembly pin as indicated in Fig.2-2-15b (to the left of center (centre) of the R section).
(2) Bring the guide hole of the take-up lever into alignment with the hole at the control plate guide and fix the position by inserting a 1.5 mm hexagonal wrench.

(3) Install the control plate so that the section A of the loading arm gear shaft fits into the hole (A) of the control plate, the section B of the control plate guide into the hole (B), and the control plate comes under the section C of the rotary encoder guide and the section D of the loading arm gear shaft while press-fit the pole base assmebly (supply side) as indicated by the arrow. It is important that the tension arm assembly shaft is positioned closer toward you than the control plate. (See Fig.2-2-15c.)
(4) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft. (See Fig.2-2-15c.)
(5) Pull off the hexagonal wrench for positioning.

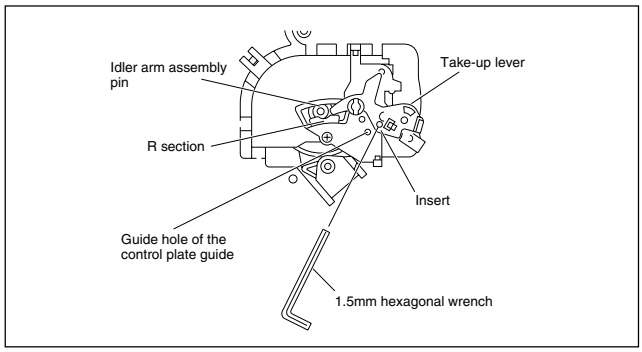


Fig. 2-2-15b

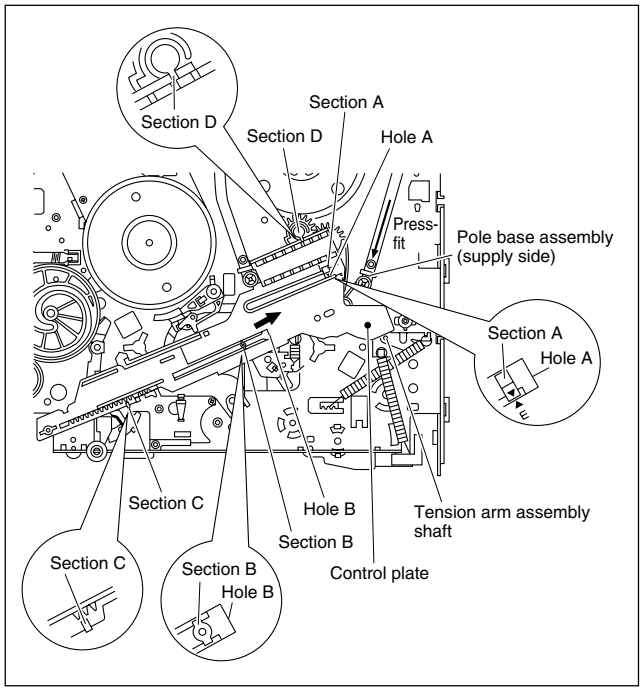


Fig. 2-2-15c

2.2.16 Loading arm gear (supply or take-up side) and loading arm gear shaft

1. How to remove

(1) Remove the loading arm gear (supply side) by loosening the screw (A). (See Fig. 2-2-16a.)
(2) Remove the screw (B) and remove the torsion arm from the pole base assembly (take-up side). (See Fig.2-2-16a.)
(3) Turn the loading arm gear (take-up side) clockwise so that the notch of the loading arm gear (take-up side) is in alignment with the projection of the loading arm gear shaft and lift it.
Likewise, turn the loading arm counterclockwise so that the notch is in alignment with the projection and remove the loading arm gear (take-up side). (See Fig.2-2-16a and Fig. 2-2-16b.)
(4) When removing the loading arm gear shaft, be sure of first removing the screw retaining the drum assembly (on the back side of the loading arm gear shaft). Then remove the screw (C) and remove the loading arm gear shaft by sliding it.

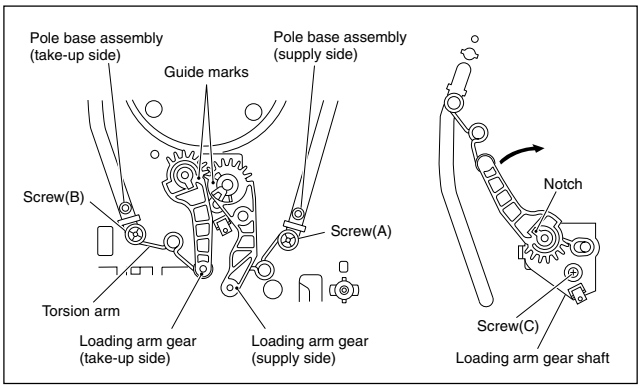


Fig. 2-2-16a

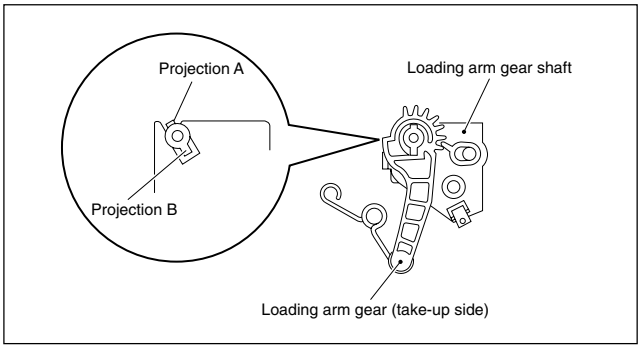


Fig. 2-2-16b

2. How to install

(1) Align the notch of the loading arm gear (take-up side) to the projection B of the loading arm gear shaft and slip it over. Then rotate it clockwise for alignment with the projection A and slip it down to the bottom. (See Fig.2-2-16b.)
(2) Then turn the loading arm gear (take-up side) counterclockwise. Hang the torsion arm on the pole base assembly (take-up side) and tighten the screw (B).
(3) Install the loading arm gear (supply side) so that the guide mark of the loading arm gear (take-up side) is in alignment with the guide mark of the loading arm gear (supply side). Then hang the torsion arm on the pole base assembly (supply side) and tighten the screw (A). (See Fig.2-2-16a.)

2.2.17 Take-up lever, take-up head and control plate guide

(1) Remove the spring of the take-up lever from the main deck.
(2) Remove the lug (A) of the take-up lever from the main deck and pull out the take-up lever and the take-up head together.
(3) Remove the screw (A).
(4) Align the idler arm assembly pin in the center (centre) of the R section of the control plate guide, remove the control plate guide lugs (B) and (C) from the main deck, and remove the control plate guide.

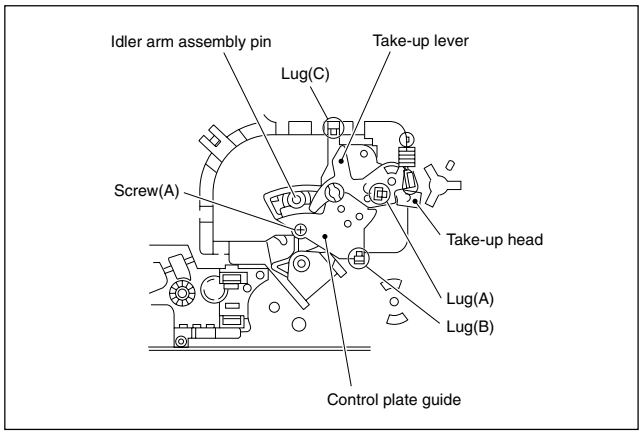


Fig. 2-2-17a

2.2.18 Capstan brake assembly

1. How to remove

(1) Move the lug (A) of the capstan brake assembly in the arrow-indicated direction so that it comes into alignment with the notch of the main deck. (See Fig. 2-2-18a.)
(2) Remove the lug (B) of the capstan brake assembly from the main deck and remove the capstan brake assembly.

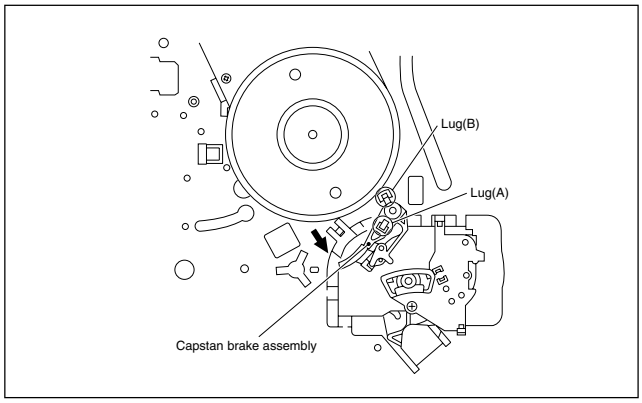


Fig. 2-2-18a

2.2.19 Sub brake assembly (take-up side)

1. How to remove

(1) Remove the spring attached to the lid guide and sub brake assembly (take-up side).
(2) Bring the lug (A) of the sub brake assembly (take-up side) into alignment with the notch of the main deck.
(3) Remove the lugs (B) and (C) of the sub brake assembly (take-up side) from the main deck and remove the sub brake assembly (take-up side).

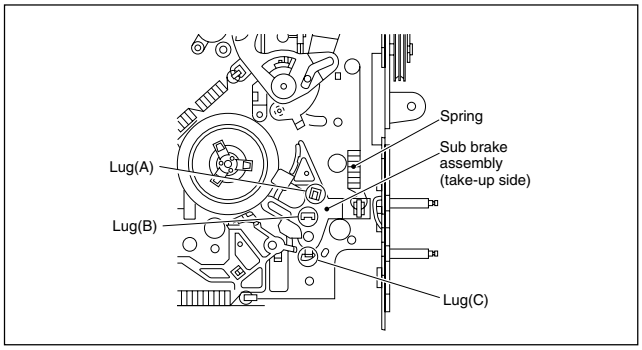


Fig. 2-2-19a

2.2.20 Main brake assembly (take-up side), reel disk (take-up side) and main brake assembly (supply side)

1. How to remove

(1) Move the main brake assembly (take-up side) in the arrow-indicated direction and remove the reel disk (take-up side).
(2) Remove the spring attached to the main brake assembly.
(3) Remove the lug (A) of the main brake assembly (take-up side) and pull out the lug (B) after bringing it into alignment with the main deck notch.
(4) Remove the lugs (C), (D) and (E) of the main brake assembly (supply side) from the main deck and pull them off. (See Fig.2-2-20a.)
(5) When installing the main brake assembly (take-up side), slide the brake lever in the direction as indicated by the arrow to prevent it from hitting the projection of the main brake assembly (take-up side). (See Fig.2-2-20b.)

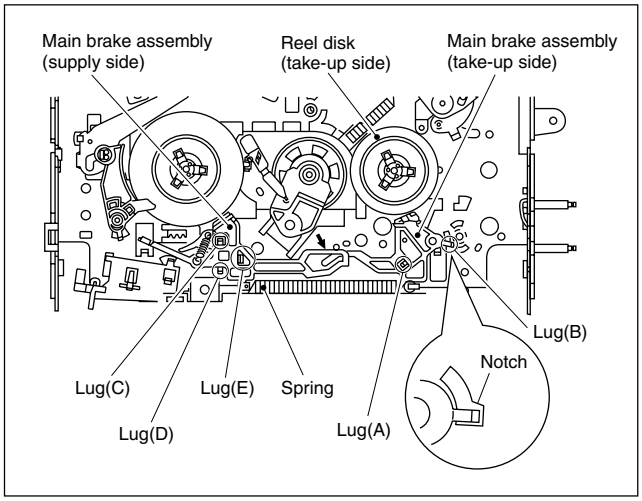
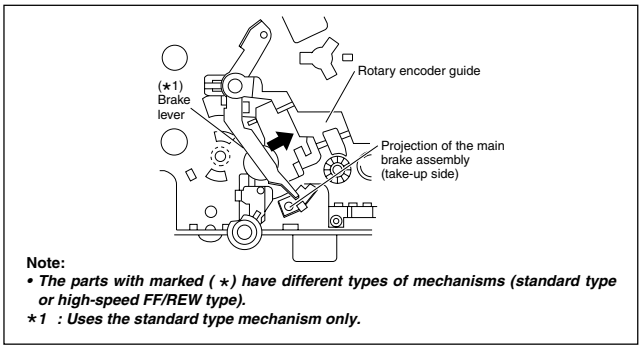


Fig. 2-2-20a



Note:
• The parts with marked (∗) have different types of mechanisms (standard type or high-speed FF/REW type).
∗1 : Uses the standard type mechanism only.

Fig. 2-2-20b

2.2.21 Tension brake assembly, reel disk (supply side) and tension arm assembly

1. How to remove

(1) Remove the three lugs of the tension brake assembly from the main deck and pull them off.
(2) Remove the reel disk (supply side) by loosening in the arrow-indicated direction the main brake assembly (supply side).
(3) Remove the tension spring on the back of the main deck. Then release the lug of the tension arm bearing in the arrow-indicated direction and draw out the tension arm assembly. (See Fig. 2-2-21a.)

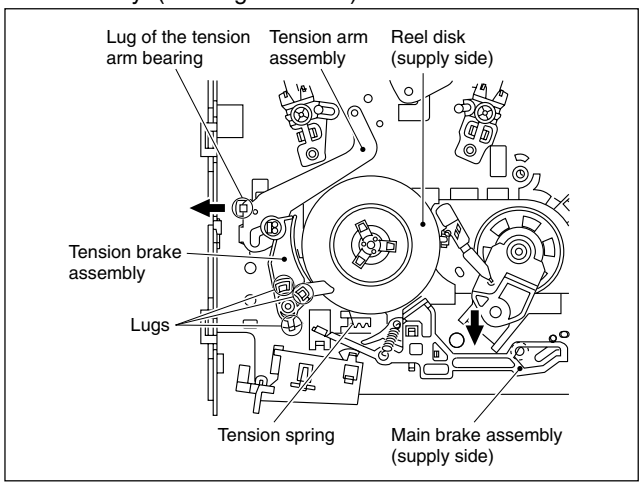


Fig. 2-2-21a

2.2.22 Idler lever, idler arm assembly

1. How to remove

(1) Remove the lug of the idler lever from the main deck and remove the hook fitted in the idler arm assembly hole by lifting it.
(2) Remove the slit washer and pull out the idler arm assembly.

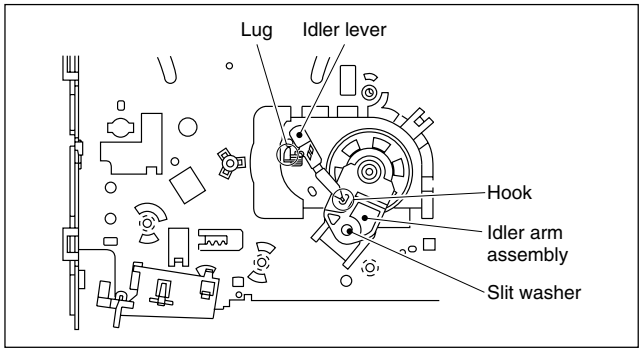


Fig. 2-2-22a

2.2.23 Stator assembly

(1) Remove the flat cable.
(2) Remove the two screws (A), (B) and remove the lug wire.
(3) Remove the stator assembly by lifting in the arrow-indicated direction. (Take care that the brush spring does not jump out.)

Notes:

- ***Be careful not to lose the brush and spring.***
- ***There are some models that do not use the lug wire. Refer to the parts list for these models.***
- ***When tightening the screw (B), place the caulked part of the lug terminal near to the shaft of the drum and then tighten it.***
- ***After installation, be sure to perform the switching point adjustment according to the electrical adjustment procedure.***

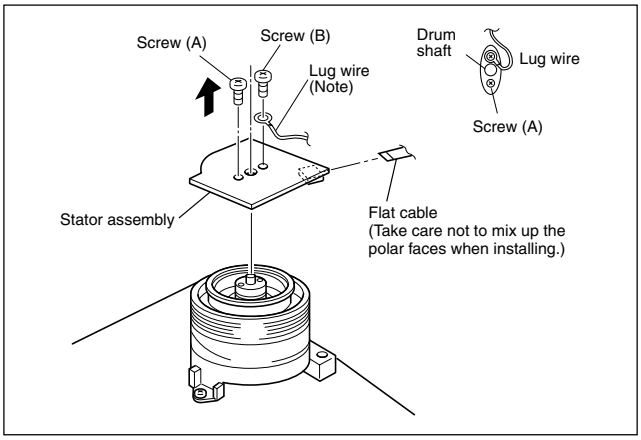


Fig. 2-2-23a

2.2.24 Rotor assembly

1. How to remove

(1) Remove the stator assembly.
(2) Remove the two screws (B) and remove the rotor assembly.

2. How to install

(1) Match the phases of the upper drum assembly and the rotor assembly as indicated in Fig.2-2-24a.
(2) Place the upper drum assembly hole (a) over the rotor assembly holes (b) (with three holes to be aligned) and tighten the two screws (B). (See Fig.2-2-24a.)

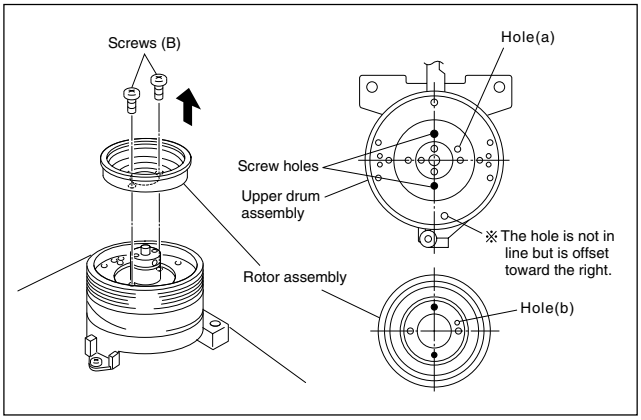


Fig. 2-2-24a

2.2.25 Upper drum assembly

Notes:

- ***To replace the upper drum assembly only may not be possible with some models. For upper drum assembly replacement, refer to the parts list. (When the parts number of the upper drum assembly is not listed on the parts list, then this cannot be replaced.)***
- ***When replacement is required, control the up- down movement of the brush. Never apply grease.***
- ***When replacing the upper drum assembly, replace it the together with the washer.***

1. How to remove

(1) Remove the stator assembly and rotor assembly.
(2) Loosen the screw of the collar assembly using a 1.5 mm hexagonal wrench and remove the collar assembly. Also remove the brush, spring and cap at one time.
(3) Remove the upper drum assembly and remove the washer using tweezers.

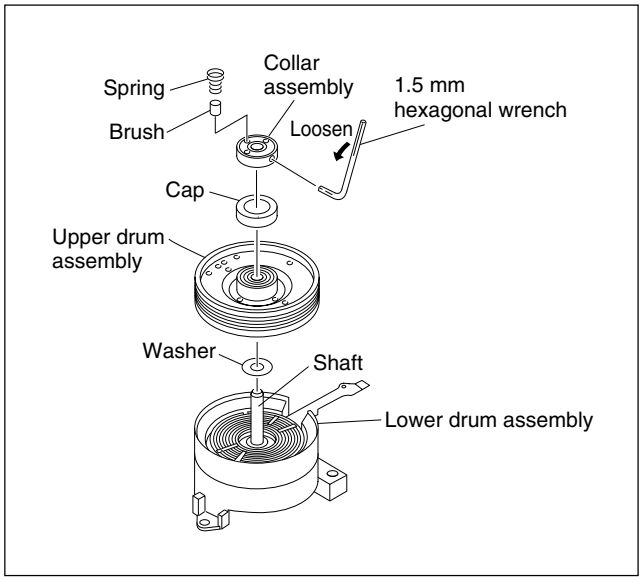


Fig. 2-2-25a

2. How to install

(1) Clean the coil parts of the lower drum assembly and the newly installed upper drum assembly with an air brush in advance. (See Fig.2-2-25b.)
(2) Install a new washer and upper drum assembly on the drum shaft. (See Fig.2-2-25a.)
(3) Install the cap to the upper drum assembly.
(4) Position the collar assembly as indicated in Fig.2-2-25c while controlling its up- down movement.
(5) Secure the collar assembly in position with a hexagonal wrench while pressing its top with the fingers.
(6) After installation, gently turn the upper drum assembly with your hand to make sure that it turns normally. Then install the brush and the spring.
(7) Install the rotor assembly and stator assembly according to Fig 2-2-23a and 2-2-24a.
(8) When installation is complete, clean the upper drum assembly and lower drum assembly and carry out the following adjustments.
    - PB switching point adjustment
    - Slow tracking adjustment
    - Compatibility adjustment (Be sure to check for compatibility for the EP (or LP) mode.)

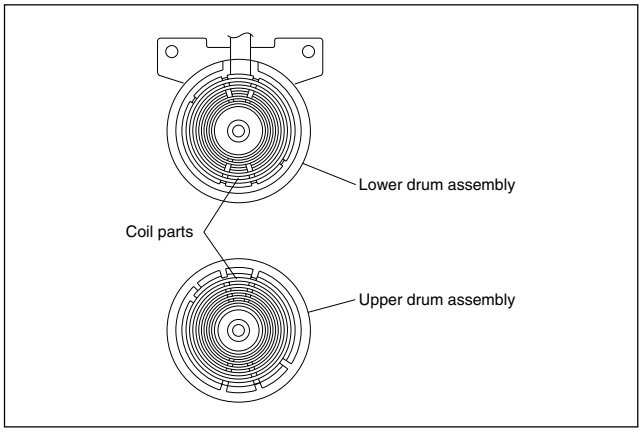


Fig. 2-2-25b

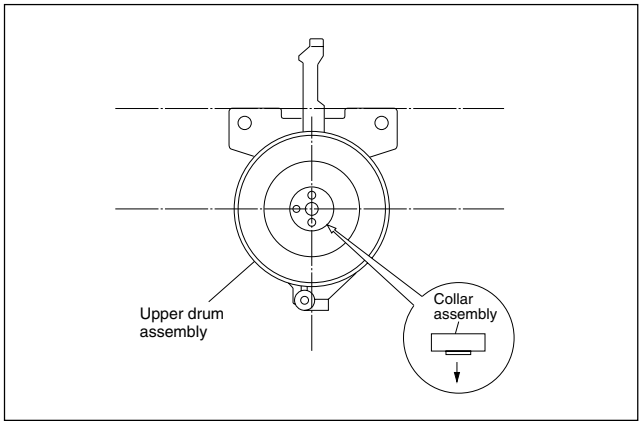


Fig. 2-2-25c

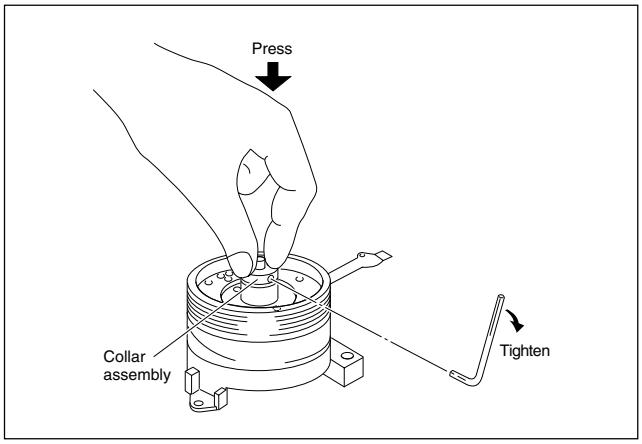


Fig. 2-2-25d

2.3 Compatibility adjustment

Notes:

- ***Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the A/C head, drum assembly or any part of the tape transport system.***
- ***To avoid any damage to the alignment tape while performing the compatibility adjustment, get a separate cassette tape (for recording and play back) ready to be used for checking the initial tape running behavior.***
- ***Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.***
- ***When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)***

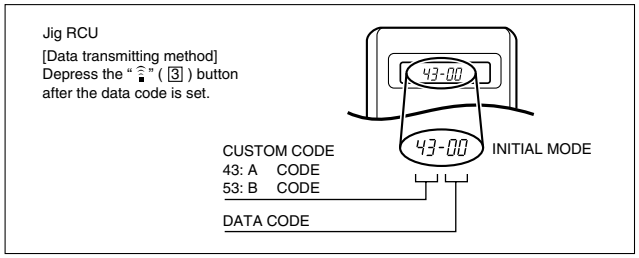


Fig. 2-3a Jig RCU [PTU94023B]

2.3.1 FM waveform linearity

Signal	(A1) (A2)	• Alignment tape(SP, stairstep, NTSC) [MHP] • Alignment tape(EP, stairstep, NTSC) [MHP-L]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Guide roller [Mechanism assembly]
Specified value	(G)	• Flat V.PB FM waveform
Adjustment tool	(H)	• Roller driver [PTU94002]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Set the VCR to the manual tracking mode.
(4) Make sure that there is no significant level drop of the V.PB FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (See Fig. 2-3-1a.)
(5) Reduce the V.PB FM waveform by the tracking operation. If a drop in level is found on the left side, turn the guide roller of the pole base assembly (supply side) with the roller driver to make the V.PB FM waveform linear.
If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the roller driver to make it linear. (See Fig. 2-3-1c.)
(6) Make sure that the V.PB FM waveform varies in parallel and linearly with the tracking operation again. When required, perform fine-adjustment of the guide roller of the pole base assembly (supply or take-up side).
(7) Unload the cassette tape once, play back the alignment tape (A1) again and confirm the V.PB FM waveform.
(8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits. (See Fig. 2-3-1d.)

[Perform adjustment step (9) only for the models equipped with SP mode and EP (or LP) mode.]

(9) Repeat steps (1) to (8) by using the alignment tape (A2).

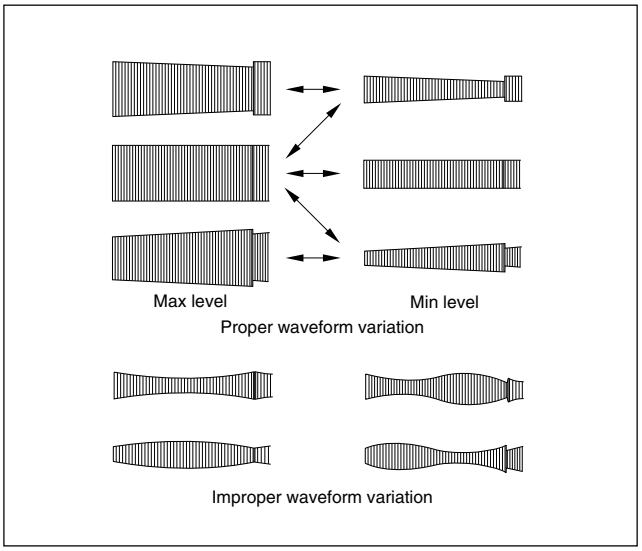


Fig. 2-3-1a

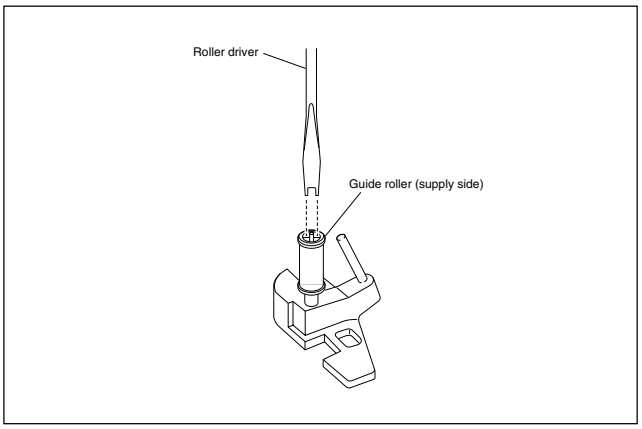


Fig. 2-3-1b

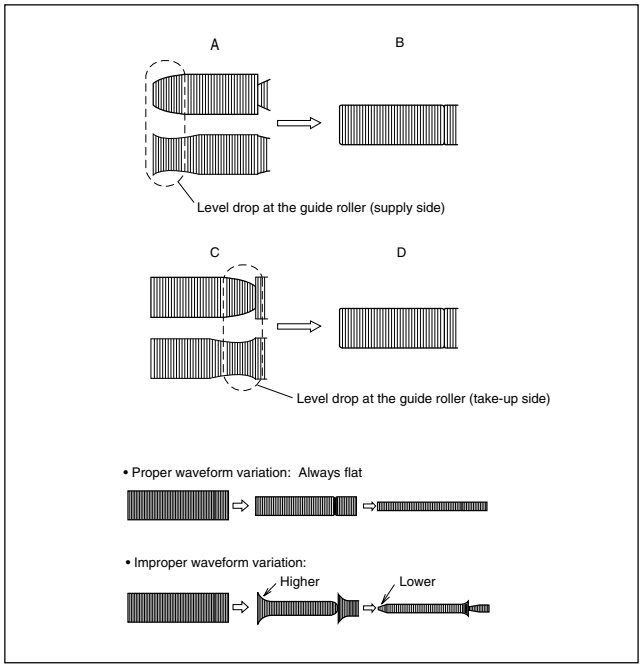


Fig. 2-3-1c

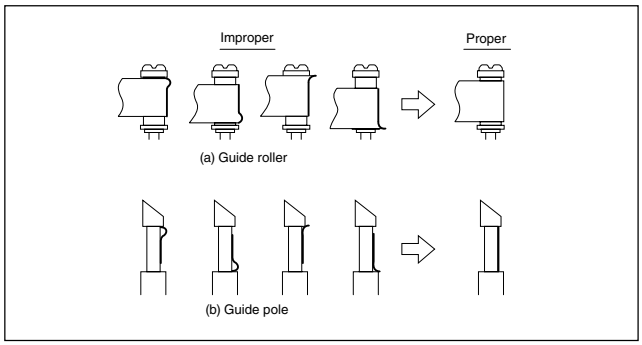


Fig. 2-3-1d

2.3.2 Height and tilt of the A/C head

Note:

- ***Set a temporary level of the height of the A/C head in advance to make the adjustment easier after the A/C head has been replaced. (See Fig.2-2-6c.)***

Signal	(A)	• Alignment tape(SP, stairstep, NTSC) [MHP]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• AUDIO OUT terminal • TP4001 (CTL. P)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• A/C head [Mechanism assembly]
Specified value	(G)	• Maximum waveform

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the AUDIO OUT waveform and Control pulse waveform at the measuring points (D1) and (D2) in the ALT mode.
(3) Set the VCR to the manual tracking mode.
(4) Adjust the AUDIO OUT waveform and Control pulse waveform by turning the screws (1), (2) and (3) little by little until both waveforms reach maximum. The screw (1) and (3) are for adjustment of tilt and the screw (2) for azimuth.

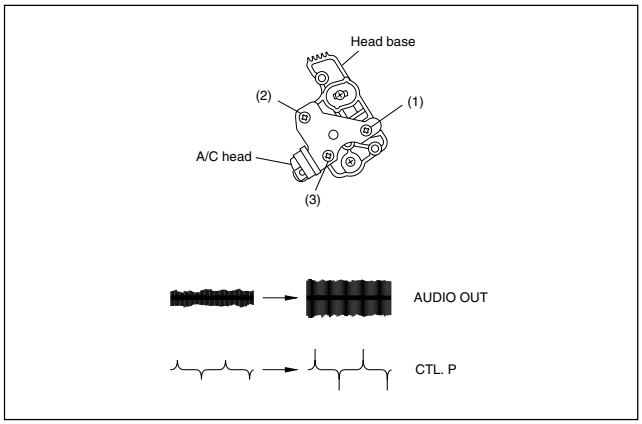


Fig. 2-3-2a

2.3.3 A/C head phase (X-value)

Signal	(A1)	• Alignment tape(SP, stairstep, NTSC) [MHP]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• A/C head base [Mechanism assembly]
Specified value	(G)	• Maximum V.PB FM waveform
Adjustment tool	(H)	• A/C head positioning tool [PTU94010]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Set the VCR to the manual tracking mode.
(4) Loosen the screws (4) and (5), then set the A/C head positioning tool to the innermost projected part of the A/C head. (See Fig. 2-3-3a.)
(5) Turn the A/C head positioning tool fully toward the capstan. Then turn it back gradually toward the drum and stop on the second peak point position of the V.PB FM waveform output level. Then tighten the screws (4) and (5).
(6) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.
If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

[Perform adjustment steps (7) to (10) only for 2 Head models equipped with LP mode.]

(7) Then play back the alignment tape (A2).
(8) Set the VCR to the manual tracking mode.
(9) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.
(10) If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

Note:

- ***After adjusting, always perform the confirmation and re-adjustment of the item 2.3.4.***

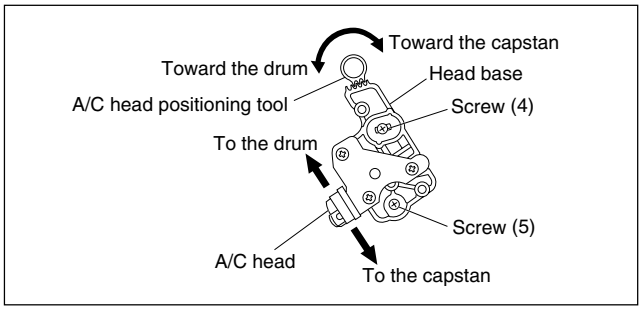


Fig. 2-3-3a

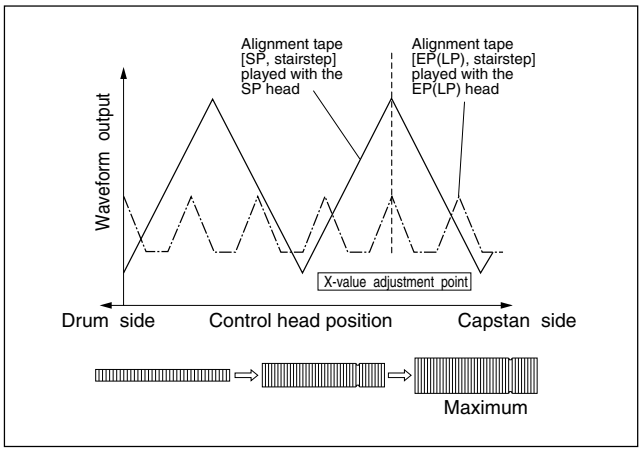


Fig. 2-3-3b

2.3.4 Standard tracking preset

Signal	(A)	• Alignment tape(EP, stairstep, NTSC) [MHP-L]
Mode	(B)	• PB → Auto adjust
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Jig RCU: Code “50”
Specified value	(G)	• STOP mode (Maximum V.PB FM waveform)
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Confirm that the automatic tracking operation is completed.
(4) Set the VCR to the Auto adjust mode by transmitting the code (F) twice from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(5) If the VCR enters the eject mode, perform adjustment for the audio control head phase (X-value) again.

2.3.5 Tension pole position

Signal	(A)	• Back tension cassette gauge [PUJ48076-2]
Mode	(B)	• PB
Adjustment part	(F)	• Adjust pin [Mechansim assembly]
Specified value	(G)	• 25 - 51 gf•cm (2.45 – 5 × 10^{-3} Nm]

(1) Play back the back tension cassette gauge (A).
(2) Check that the indicated value on the left side gauge is within the specified value (G).
(3) If the indicated value is not within the specified value (G), perform the adjustment in a following procedure.
  1) Set the VCR to the mechanism service mode. (See SECTION 1 DISASSEMBLY.)
  2) Set the VCR to the play back mode and adjust by turning adjustment pin to align the tension arm assembly edge with the main deck hole (A) on the right edge marker. (See Fig. 2-3-5a)

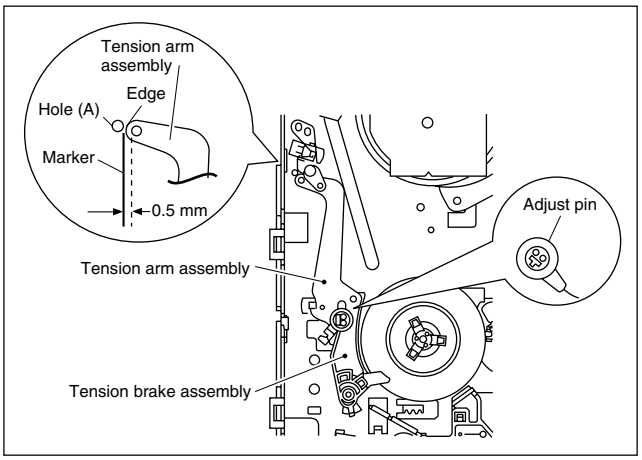
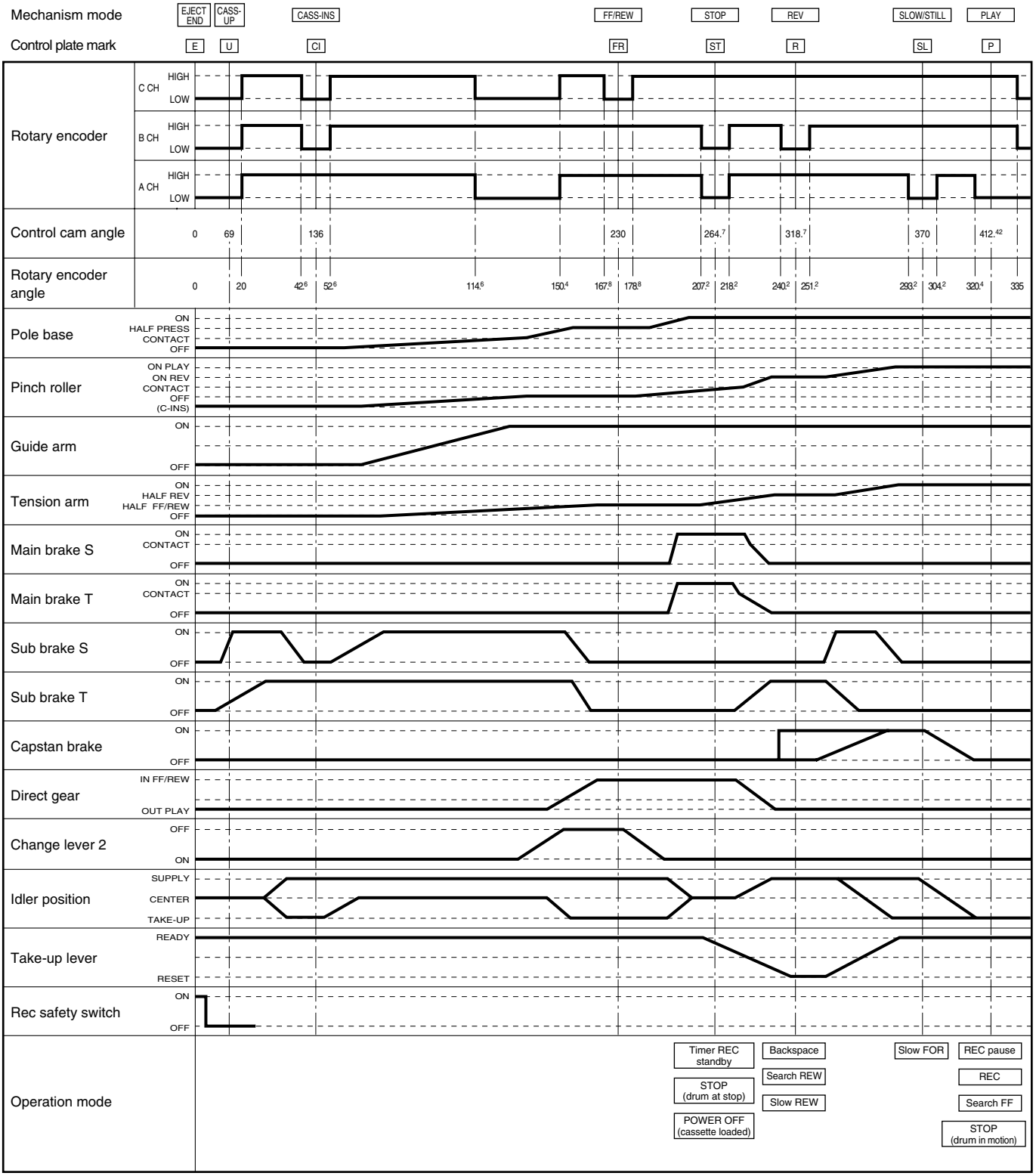


Fig. 2-3-5a

Mechanism Timing Chart



SECTION 3
ELECTRICAL ADJUSTMENT

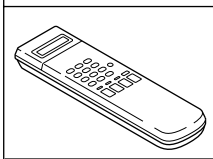
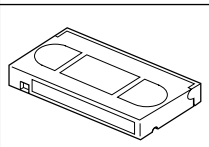
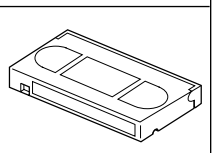
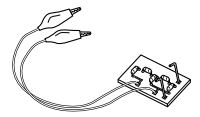
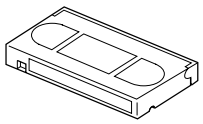
3.1 Precaution

The following adjustment procedures are not only necessary after replacement of consumable mechanical parts or board assemblies, but are also provided as references to be referred to when servicing the electrical circuitry.
In case of trouble with the electrical circuitry, always begin a service by identifying the defective points by using the measuring instruments as described in the following electrical adjustment procedures. After this, proceed to the repair, replacement and/or adjustment. If the required measuring instruments are not available in the field, do not change the adjustment parts (variable resistor, etc.) carelessly.

3.1.1 Required test equipments

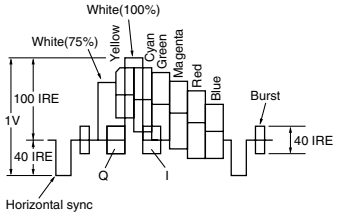
- Color (colour) television or monitor
- Oscilloscope: wide-band, dual-trace, triggered delayed sweep
- Frequency counter
- Audio level meter
- Signal generator: RF / IF sweep / marker
- Signal generator: stairstep, color (colour) bar [NTSC]
- Recording tape
- Digit-key remote controller (provided)

3.1.2 Required adjustment tools

Jig RCU PTU94023B	Alignment tape (SP, stairstep, NTSC) MHP	Alignment tape (EP, stairstep, NTSC) MHP-L
		
LPF PTU93006	Alignment tape (S-VHS, SP/EP, color (colour) bar) MH-1H	
		

3.1.3 Color (colour) bar signal,Color (colour) bar pattern

● **Color bar signal [NTSC]**



● **Color bar pattern [NTSC]**

3.1.4 Switch settings and standard precautions

The SW settings of the VCR and the standard precautions for the electrical adjustments are as follows.

- ***When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)***

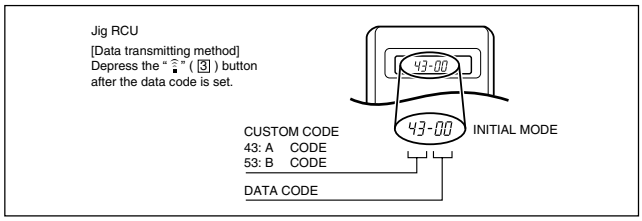


Fig. 3-1-4a Jig RCU [PTU94023B]

- ***Set the switches as shown below unless otherwise specified on the relevant adjustment chart. The switches that are not listed below can be set as desired.***
  If the VCR is not equipped with the functions detailed below, setup is not required.

AUTO PICTURE/VIDEO CALIBRATION/ B.E.S.T./D.S.P.C.	OFF
PICTURE CONTROL/SMART PICTURE	NORMAL/NATURAL
VIDEO STABILIZER	OFF
TBC	ON
Digital 3R	ON
VIDEO NAVIGATION/TAPE MANAGER	OFF

- ***If there is a reference to a signal input methed in the signal column of the adjustment chart, "Ext. S-input" means the Y/C separated video signal and "Ext. input" means the composite video signal input.***
- ***Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.***

3.1.5 EVR Adjustment

Some of the electrical adjustments require the adjustment performed by the EVR system. The main unit have EEPROMs for storing the EVR adjustment data and user setups.

Notes:

- ***In the EVR adjustment mode, the value is varied with the channel buttons (+, –). The adjusted data is stored when the setting mode changes (from PB to STOP, when the tape speed is changed, etc.). Take care to identify the current mode of each adjustment item when making an adjustment.***
- ***When changing the address setting in the EVR adjustment mode, use the Jig RCU or the remote controller having numeric keypad with which a numeric code can be directly input.***
  The remote control code of the Jig RCU corresponds to each of the digit keys on the remote controller as follows.

Digit-key	0	1	2	3	4	5	6	7	8	9
Code	20	21	22	23	24	25	26	27	28	29

- ***As the counter indication and remaining tape indication are not displayed FDP during the EVR adjustment mode, check them on the TV monitor screen.***
- ***When performing the EVR adjustment, confirm that the FDP indication is changed to the EVR mode, as shown below.***

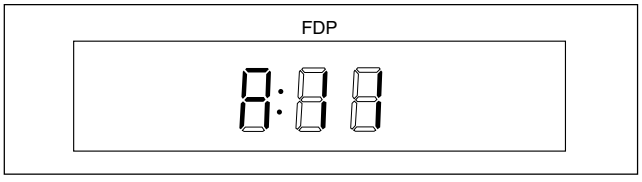


Fig. 3-1-5a EVR mode

3.2 Servo circuit

3.2.1 Switching point

Signal	(A1) (A2)	• Stairstep signal • Alignment tape (SP,stairstep,NTSC) [MHP]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• VIDEO OUT terminal (75Ω terminated) • TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)/slope : –
Adjustment part	(F)	• Jig code “5A”
Specified value	(G)	• 7.5 ± 0.5H
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Play back the signal (A1) of the alignment tape (A2).
(2) Apply the external trigger signal to D.FF (E) to observe the VIDEO OUT waveform and V.PB FM waveform at the measuring points (D1) and (D2).
(3) Set the VCR to the manual tracking mode.
(4) Adjust tracking so that the V.PB FM waveform becomes maximum.
(5) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(6) If the VCR enters the eject mode, repeat steps (1) to (5) again.
(7) Play back the alignment tape (A2) again, confirm that the switching point is the specified value (G).

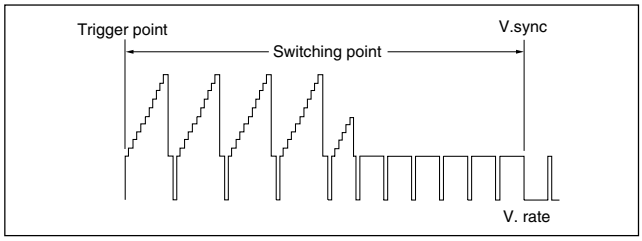


Fig. 3-2-1a Switching point

3.2.2 Slow tracking preset

Signal	(A1) (A2)	• Ext. input • Color (colour) bar signal [NTSC]
Mode	(B1) (B2)	• VHS SP • VHS EP
Measuring point	(D)	• TV-Monitor
Adjustment part	(F)	• Jig code “71“ or “72”
Specified value	(G)	• Minimum noise
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(2) Set the VCR to the manual tracking mode.
(3) Set the VCR to the FWD slow (+1/6x) mode.
(4) Transmit the code (F) from the Jig RCU to adjust so that the noise bar becomes the specified value (G) on the TV monitor in the slow mode.
(5) Set the VCR to the Stop mode.
(6) Confirm that the noise bar is (G) on the TV monitor in the slow mode.
(7) Repeat steps (3) to (6) in the REV slow (–1/6x) mode.
(8) Repeat steps (1) to (7) in the mode (B2).

Note:

- ***For FWD slow (+1/6x) playback, transmit the code “08” from the Jig RCU to enter the slow playback mode, and transmit the code “D0” for REV slow (–1/6x) mode.***

3.3 Video circuit

3.3.1 D/A level

Signal	(A1) (A2) (A3)	• Ext. S-input / Ext. input • Color (colour) bar signal [NTSC] • S-VHS tape
Mode	(B)	• S-VHS • EE
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• VIDEO OUT terminal (75Ω terminated)
Adjustment part	(F)	• VR1201 (D/A LEVEL ADJ) [2D DIGITAL board]
Specified value (Note)	(G)	• 1.00 ± 0.015 Vp-p (reference value)

(1) Insert the cassette tape (A3) to enter the mode (B).
(2) Observe the VIDEO OUT waveform at the measuring point (D).
(3) Check the Y level value when the External S-input (Y/C separated video signal).
(4) Switch the input signal to the External input (composite video signal), and adjust the adjustment part (F) so that the Y level becomes the same value observed in step (3).

Note:

- ***The specified value (G) is just a reference value to be obtained when the External S-Video (Y/C separated video) signal is input. In actual adjustment, set it to the value observed in step (3).***

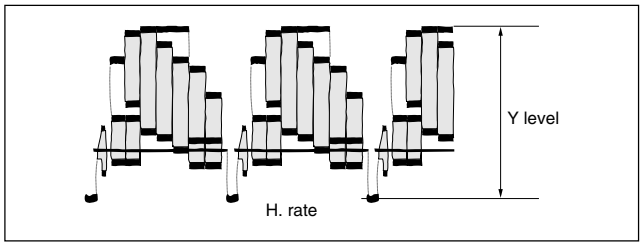


Fig. 3-3-1a D/A level

3.3.2 EE Y/PB Y (S-VHS/VHS) level

Signal	(A1) (A2)	• Ext. input • Color (colour) bar signal [NTSC]
Mode	(B1) (B2) (B3)	• EE • S-VHS SP • VHS SP
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• Y OUT terminal (75Ω terminated)
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 11 • Jig code “21” • Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• 1.00 ± 0.05 Vp-p
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Observe the Y OUT waveform at the measuring point (D).
(2) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.

(3) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(4) Transmit the code (F4) from the Jig RCU to adjust so that the Y level of the Y OUT waveform becomes the specified value (G).
(5) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(6) Record the signal (A2) in the mode (B2), and play back the recorded signal.
(7) Set the VCR to the manual tracking mode.
(8) Repeat steps (1) to (5) in the mode (B2).
(9) Record the signal (A2) in the mode (B3), and play back the recorded signal.
(10) Set the VCR to the manual tracking mode.
(11) Repeat steps (1) to (5) in the mode (B3).

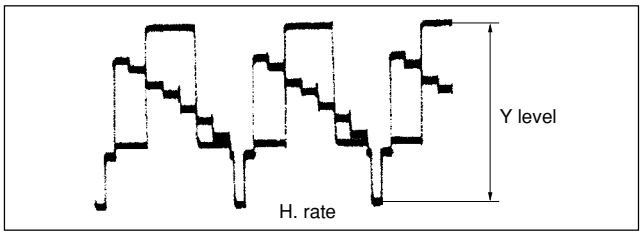


Fig. 3-3-2a EE/PB Y level

3.3.3 REC color (colour) level

Signal	(A1)	• Alignment tape(S-VHS, SP/EP, Color(colour) bar) [MH-1H]
	(A2)	• Ext. input
	(A3)	• Color (colour) bar signal [NTSC]
Mode	(B1)	• S-VHS SP
	(B2)	• S-VHS EP
Equipment	(C)	• Oscilloscope
Measuring point	(D1)	• TP106 (PB. FM)
	(D2)	• PB color (colour) output of the LPF
External trigger	(E)	• TP111 (D.FF)
EVR mode	(F1)	• Jig code “57”
EVR address	(F2)	• A : 02
	(F3)	• Jig code “20” and “22”
	(F4)	• Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• SP: “B” x 125 ± 5%
		• EP: “B” x 125 ± 5%
Adjustment tool	(H1)	• Jig RCU [PTU94023B]
	(H2)	• LPF [PTU93006] (See Fig. 3-3-3a.)

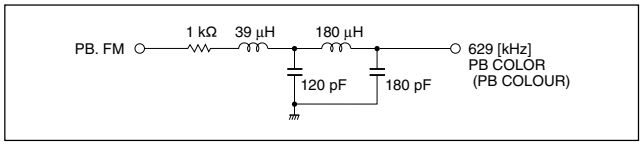


Fig. 3-3-3a LPF

(1) Connect the adjustment tool (H2) to the measuring point (D1).
(2) Apply the external trigger signal to D.FF (E) to observe the PB color (colour) waveform at the measuring point (D2).
(3) Play back the signal (A3) in the mode (B1) of the alignment tape (A1).
(4) Set the VCR to the manual tracking mode.
(5) Adjust tracking so that the PB color (colour) waveform becomes maximum. Make a note of the higher PB color (colour) level as “B” at this time.
(6) Record the signal (A3) in the mode (B1), and play back the recorded signal.
(7) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(8) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(9) Transmit the code (F4) from the Jig RCU to adjust so that the higher level channel becomes the specified value (G) of the note "B" level as shown in Fig. 3-3-3b. (Adjust before recording, then confirm it by playing back.)
(10) After adjustment, record the signal (A3) then playing it back again. At this time, confirm that there is no inverting phenomenon or noise appearing on the playback screen.
(11) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(12) Repeat steps (3) to (11) in the mode (B2).

Note:

- ***After adjusting, always perform the confirmation and re-adjustment of the item 3.4.1.***

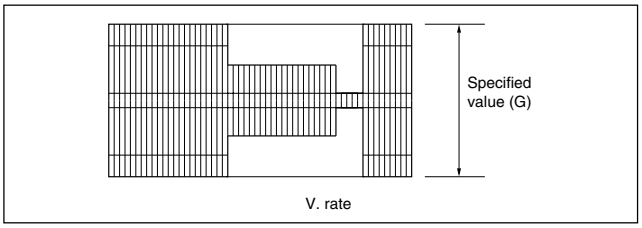


Fig. 3-3-3b REC color (colour) level

3.3.4 Video EQ (Frequency response)

Signal	(A1)	• Ext. S-input
	(A2)	• Video sweep signal
Mode	(B1)	• S-VHS SP
	(B2)	• S-VHS EP
	(B3)	• Picture Control / Smart Picture REC : Normal / Natural PB : Edit / Distinct
Equipment	(C)	• Oscilloscope
Measuring point	(D1)	• Y OUT terminal (75Ω terminated)
Frequency marker	(D2)	• 3 [MHz]
External trigger	(E)	• TP111 (D.FF)
EVR mode	(F1)	• Jig code “57”
EVR address	(F2)	• A : 03
	(F3)	• Jig code “20” and “23”
	(F4)	• Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• SP: 2.8 ± 0.3 div. (–3 ± 1 dB)
		• EP: 2.8 ± 0.3 div. (–3 ± 1 dB)
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Apply the external trigger signal to D.FF (E) to observe the Y OUT waveform at the measuring point (D1).
(2) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(3) Set the VCR to the manual tracking mode.
(4) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(5) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(6) Set the slope of the oscilloscope to the channel having higher (D2) marker level of the Y OUT waveform [signal (A2)]. Then set the 100 kHz marker level to the “4” scale on the oscilloscope. In this condition, transmit the code (F4) from the Jig RCU to adjust so that the (D2) marker level reaches the specified value (G).

(7) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(8) Repeat steps (2) to (7) in the mode (B2).

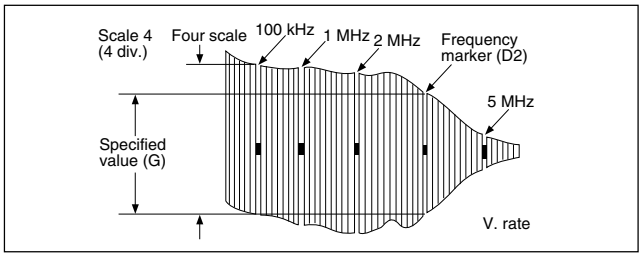


Fig. 3-3-4a Video EQ (Frequency Response)

3.3.5 Auto picture initial setting

Signal	(A1) (A2) (A3)	• Ext. input • Video: Optional • VHS tape
Mode	(B)	• EE → Auto adjust (SP/EP REC → PB)
Adjustment part	(F)	• Jig code “58”
Specified value	(G)	• STOP mode
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Insert the cassette tape (A3).
(2) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed. When the VCR enters the eject mode, repeat steps (1) to (2) again.

3.4 Audio circuit

Notes:

- ***This adjustment should be done after the “REC color (colour) level adjustment” for the video circuit has been completed.***
- ***GND (Ground) should be taken from the Tuner shield case.***

3.4.1 Audio REC FM

Signal	(A1) (A2) (A3)	• Ext. input • Audio: No signal • Video: Color (colour) bar signal [NTSC]
Mode	(B)	• S-VHS EP
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP2253 (A. PB. FM)
External trigger	(E)	• TP111 (D.FF)
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 30 • Jig code “23” and “20” • Jig code “18” or “19” (Channel +/-)
Specified value	(G1) (G2)	• 500 ± 100 mVp-p • More than 350 mVp-p
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Apply the external trigger signal to D.FF (E) to observe the Audio PB FM waveform at the measuring point (D).
(2) Record the signal (A3) with no audio signal input in the mode (B), and play back the recorded signal.
(3) Set the VCR to the manual tracking mode.
(4) If the A.PB FM level is not within the specified value (G1), perform the adjustment in a following procedure.
(5) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(6) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(7) Transmit the code (F4) from the Jig RCU to adjust so that the A.PB FM level of the higher channel level becomes the specified value (G1). (Adjust before recording, then confirm it by playing back.)
(8) If the specified value (G1) is not obtained, transmit the code (F4) from the Jig RCU to adjust so that the waveform level of the lower channel level becomes the specified value (G2). (Adjust before recording, then confirm it by playing back.)
(9) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

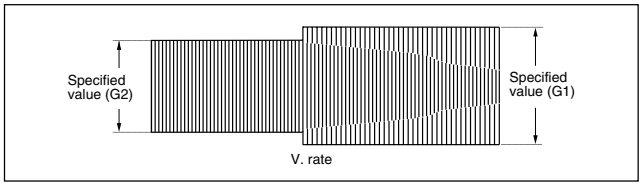


Fig. 3-4-1a Audio REC FM

3.5 Demodulator circuit

Notes:

- ***Unless otherwise specified in this demod circuit adjustments, all measuring points and adjustment parts are located on the Demod board.***
- ***Unless otherwise specified,set an audio multiplex TV signal generator as follows;***
  RF signal : 70 dBμ / 75Ω, color bar 87.5% modulation.

3.5.1 Input level

Signal	(A)	• RF signal (Audio: mono 300 Hz)
Mode	(B)	• Tuner • EE
Equipment	(C)	• Audio level meter
Measuring point	(D)	• IC1501 pin 26
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 20 • Jig code “22” and “20” • Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• 500 ± 10 mVrms
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Set an audio signal mode of the RF signal generator to mono 300 Hz.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.2 Stereo VCO

Signal	(A)	• No signal
Mode	(B)	• Tuner • EE
Equipment	(C)	• Frequency counter
Measuring point	(D1)	• IC1501 pin 26
Short point	(D2)	• C1505(–) terminal
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 21 • Jig code “22” and “21” • Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• 15.73 ± 0.1 kHz
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Connect the short wire between the short point (D2) and the GND (Ground).
(2) Connect the equipment (C) to the measuring point (D1).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the frequency of the measuring point (D1) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(7) Disconnect the short wire between the short point (D2) and the GND (Ground).

3.5.3 Stereo filter

Signal	(A)	• RF signal (Audio: No signal)
Mode	(B)	• Tuner • EE
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• IC1501 pin 26
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 22 • Jig code “22” twice • Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• Minimum level
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Set an audio signal mode of the RF signal generator to no signal.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.4 Separation - 1

Signal	(A)	• RF signal (Audio: L-ch 300 Hz 14% modulated)
Mode	(B)	• Tuner • EE
Equipment	(C)	• Audio level meter
Measuring point	(D)	• IC1501 pin 26
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 23 • Jig code “22” and “23” • Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• Minimum level
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Set an audio signal mode of the RF signal generator to alternate L-ch 300 Hz 14% modulated.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.5 Separation - 2

Signal	(A)	• RF signal (Audio: L-ch 5 kHz 14% modulated)
Mode	(B)	• Tuner • EE
Equipment	(C)	• Audio level meter
Measuring point	(D)	• IC1501 pin 26
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 24 • Jig code “22” and “24” • Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• Minimum level
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Set an audio signal mode of the RF signal generator to alternate L-ch 5 kHz 14% modulated.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point(D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.6 SAP VCO

Signal	(A)	• No. signal
Mode	(B)	• Tuner • EE
Equipment	(C)	• Frequency counter
Measuring point	(D1)	• IC1501 pin 26
Short point	(D2)	• C1505 (–) terminal
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 25 • Jig code “22” and “25” • Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• 78.67 ± 0.5 kHz
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Connect the short wire between the short point (D2) and the GND (Ground).
(2) Connect the equipment (C) to the measuring point (D1).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the frequency of the measuring point (D1) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(7) Disconnect the short wire between the short point (D2) and the GND (Ground).

SECTION 4
CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

1. Units of components on the schematic diagram

Unless otherwise specified.

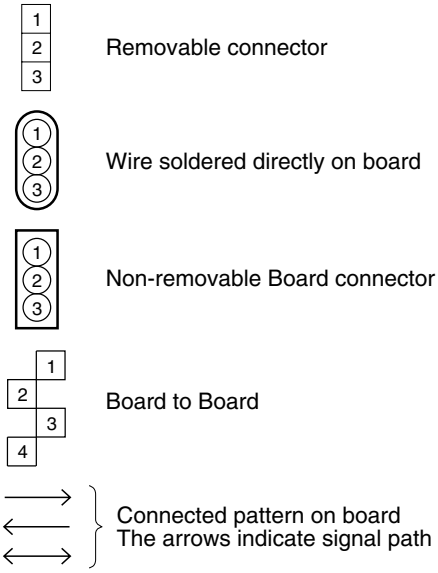
1) All resistance values are in ohm, 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K or k: kΩ (1000Ω), M: MΩ (1000kΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values are in μH, (m: mH).
4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

2. Indications of control voltage

AUX : Active at high

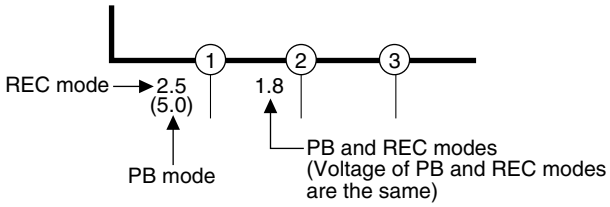
$\overline{\text{AUX}}$ or AUX(L) : Active at low

3. Interpreting Connector indications



4. Voltage measurement

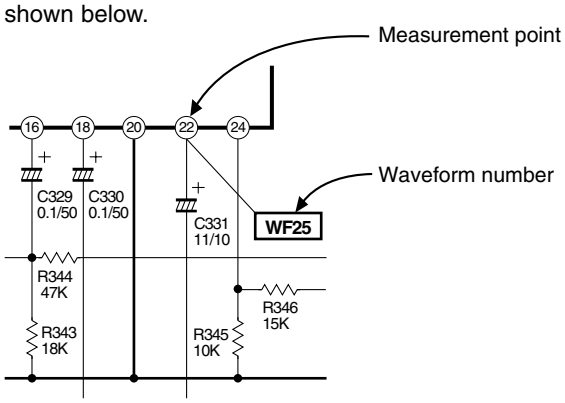
1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
   — : Unmeasurable or unnecessary to measure
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
4) Indication on schematic diagram
   Voltage Indications for REC and PB mode on the schematic diagram are as shown below.



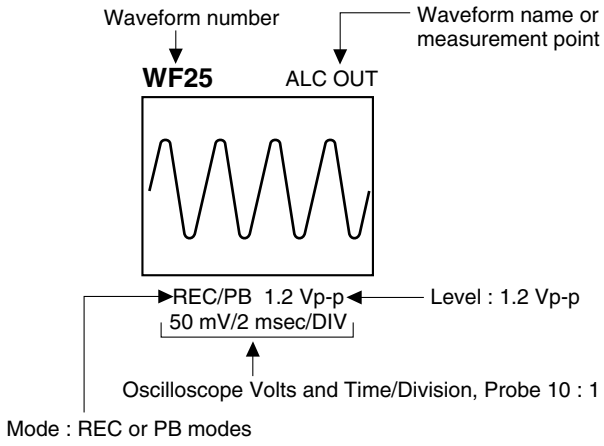
Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test chatrs in the E-E mode
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.



5) Waveform indications



6. Signal path Symbols

The arrows indicate the signal path as follows.

Playback signal path

Playback and recording signal path

Recording signal path
(including E-E signal path)

Capstan servo path

Drum servo path

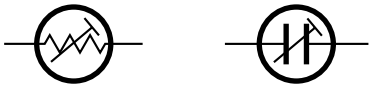
(Example)

R-Y Playback R-Y signal path

Y Recording Y signal path

7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.

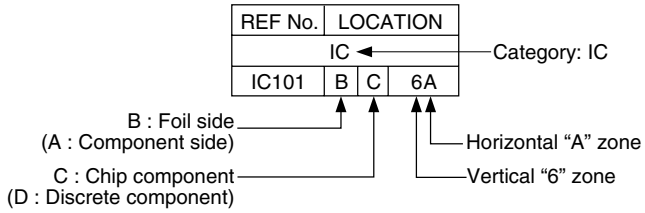
CIRCUIT BOARD NOTES

1. Foil and Component sides

1) Foil side (B side) :
   Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
   Parts on the component side seen from component face (parts face) indicated.

2. Parts location guides

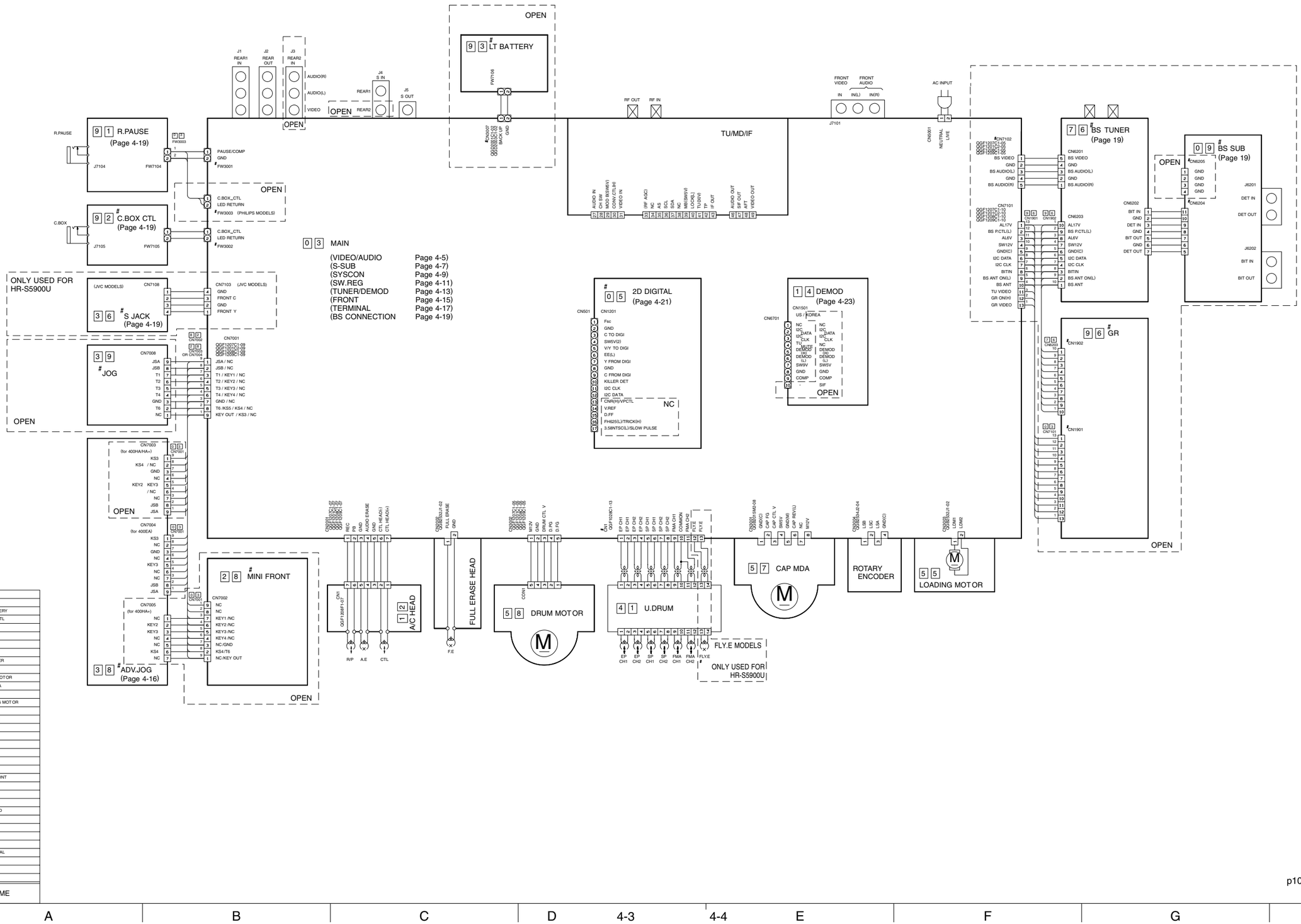
Parts location are indicated by guide scale on the circuit board.



Note:

For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

4.1 BOARD INTERCONNECTIONS



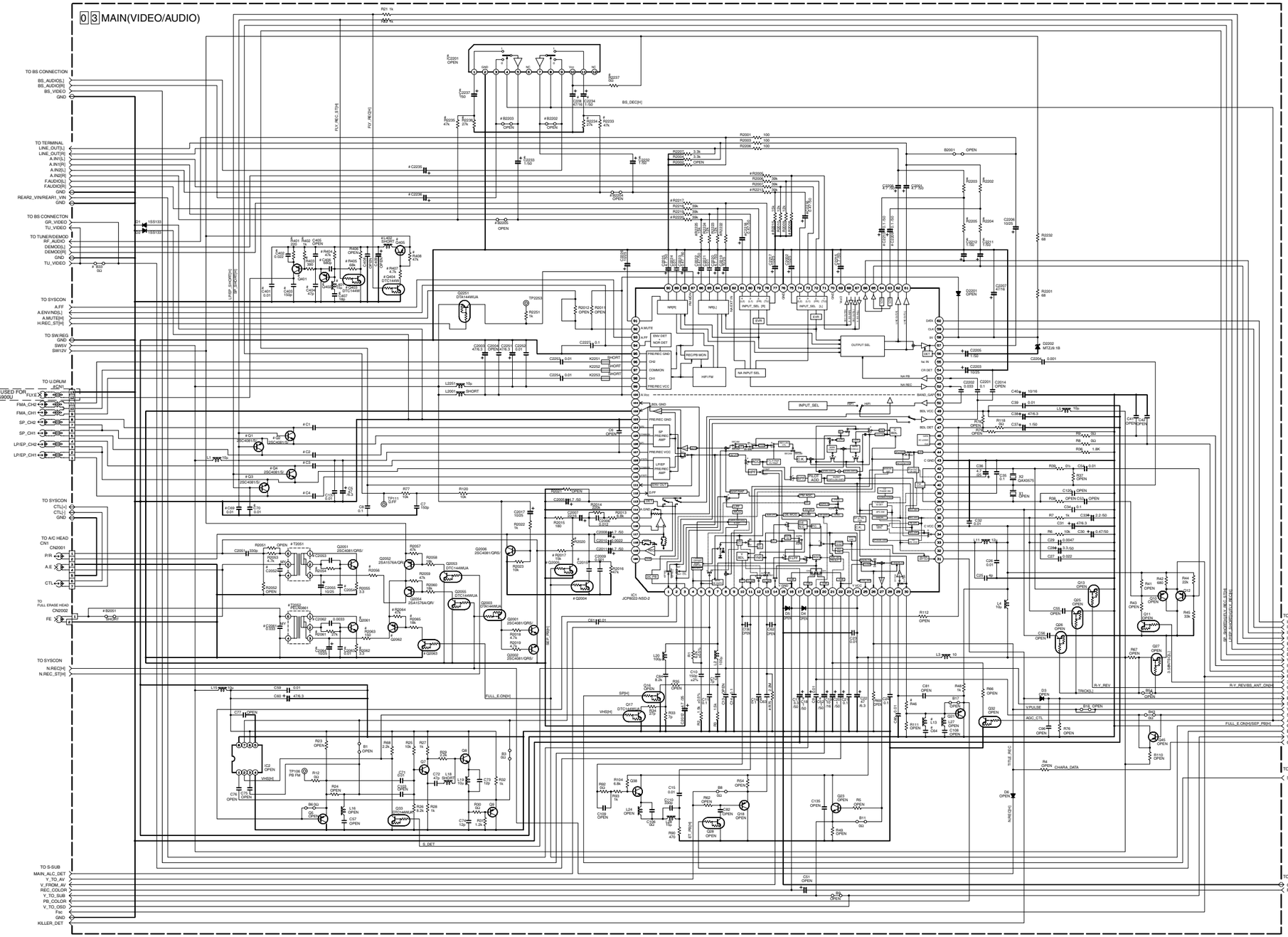
NO	NAME
9 6	GR
9 3	LT BATTERY
9 2	C.BOX CTL
9 1	R.PAUSE
7 6	BS TUNER
5 8	DRUM MOTOR
5 7	CAP MDA
5 5	LOADING MOTOR
4 1	U.DRUM
3 9	JOG
3 8	ADV.JOG
3 6	S JACK
2 8	MINI FRONT
1 4	DEMOD
1 2	A/C HEAD
0 9	BS SUB
0 5	2D DIGITAL
0 3	MAIN

p10346001a_rev0

A B C D 4-3 4-4 E F G H

4.2 MAIN (VIDEO/AUDIO) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



DIFFERENCE TABLE

MODEL		Q401-Q405 R401-R409	C401-C409 L401,L402	CN1	Q1-Q4 C69,C70	C1-C4
FLYING ERASE	YES	O		1-13 PIN	X	0.01
	NO	X		1-11 PIN	O	1

MODEL		C52	R2212,R2214 R2216,R2221
BS TUNER	YES	O	O
	NO	X	X

MODEL		C18	R2213,R2215,C2216 R2220,R2215,C2218
BS DECORDER OR L2_IN	YES	O	O
	NO	X	X

MODEL		R2202,R2203,R2204,R2205 C2203,C2210,C2211,C2212
L.IND	YES	O
	NO	X

MODEL		B33
GR TUNER	YES	X
	NO	O

MODEL	R75	C63
2D	X	0.1
3D	O	0.047

MODEL	R46	L13	C64
PB COL TRAP	2D(JVC)	470	100µ	12p
	2D(PCEC)	390	68µ	20p
	3D	270	100µ	12p

MODEL		T2051,R2051,R2052,R2053 R2055,R2056,R2057,R2058 C2061,C2062,C2063,C2064	T2051	R2054	R2056	C2052	C2053	C2054
A.DUB	YES	O	PELN0860	15k	100	0.033	0.0033	0.01
	NO	X	PELN0832	12k	82	0.082	0.0047	0.022

NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/

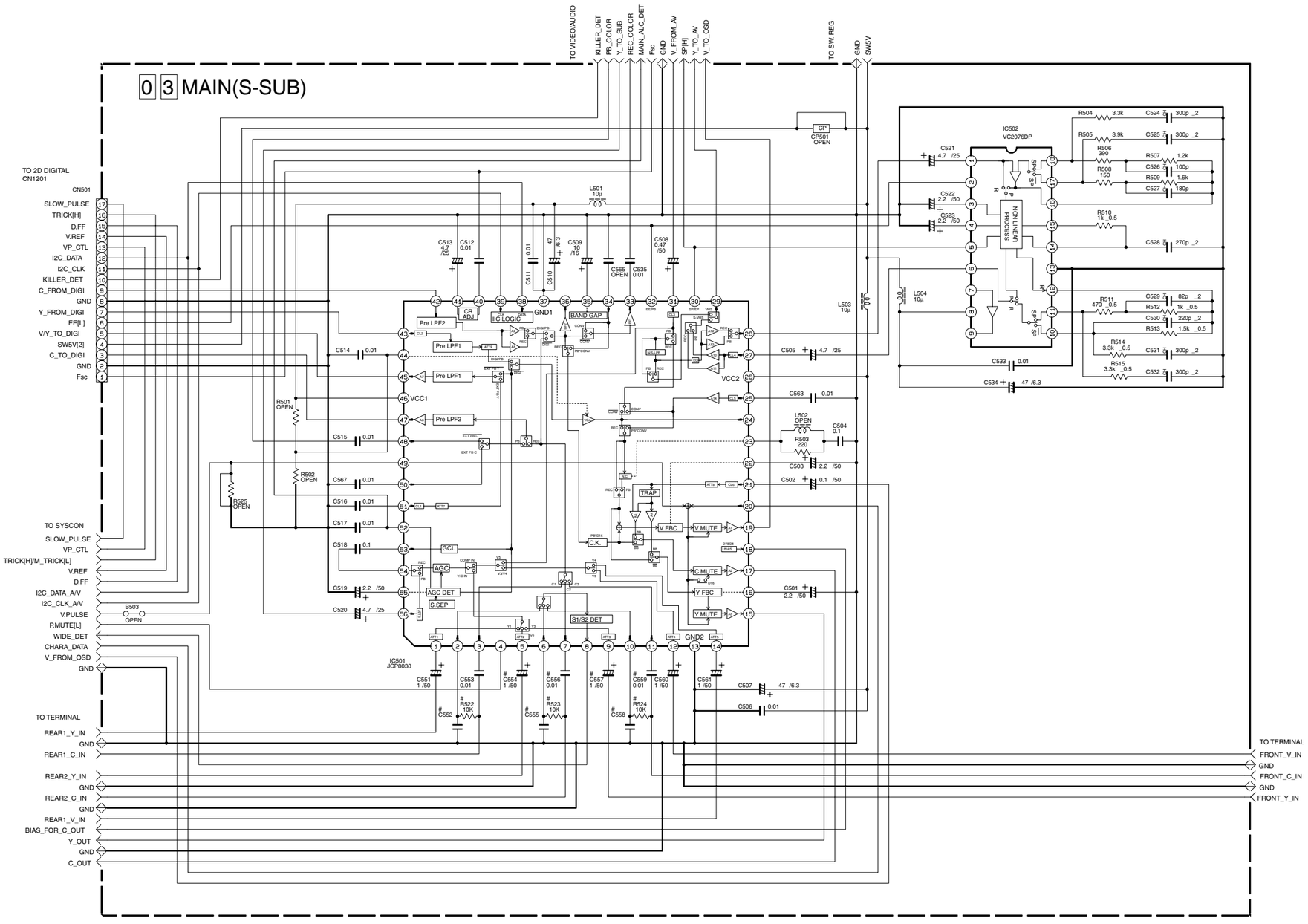
ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p10351001a_rev0

A B C D 4-5 4-6 E F G H

4.3 MAIN (S-SUB) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



DIFFERENCE TABLE

SYMBOL / MODEL	R523 C554 C555 C556	R522 R524 C552 C558	C557 C559	C555	C552 C558
S-VHS JPN F_S_IN REAR2_IN	○	○	○	0.01	0.01
S-VHS JPN F_S_IN	X	○	○	0Ω	0.01
S-VHS US F_S_IN	X	X	○	0Ω	0Ω
S-VHS US	X	X	X	0Ω	0Ω

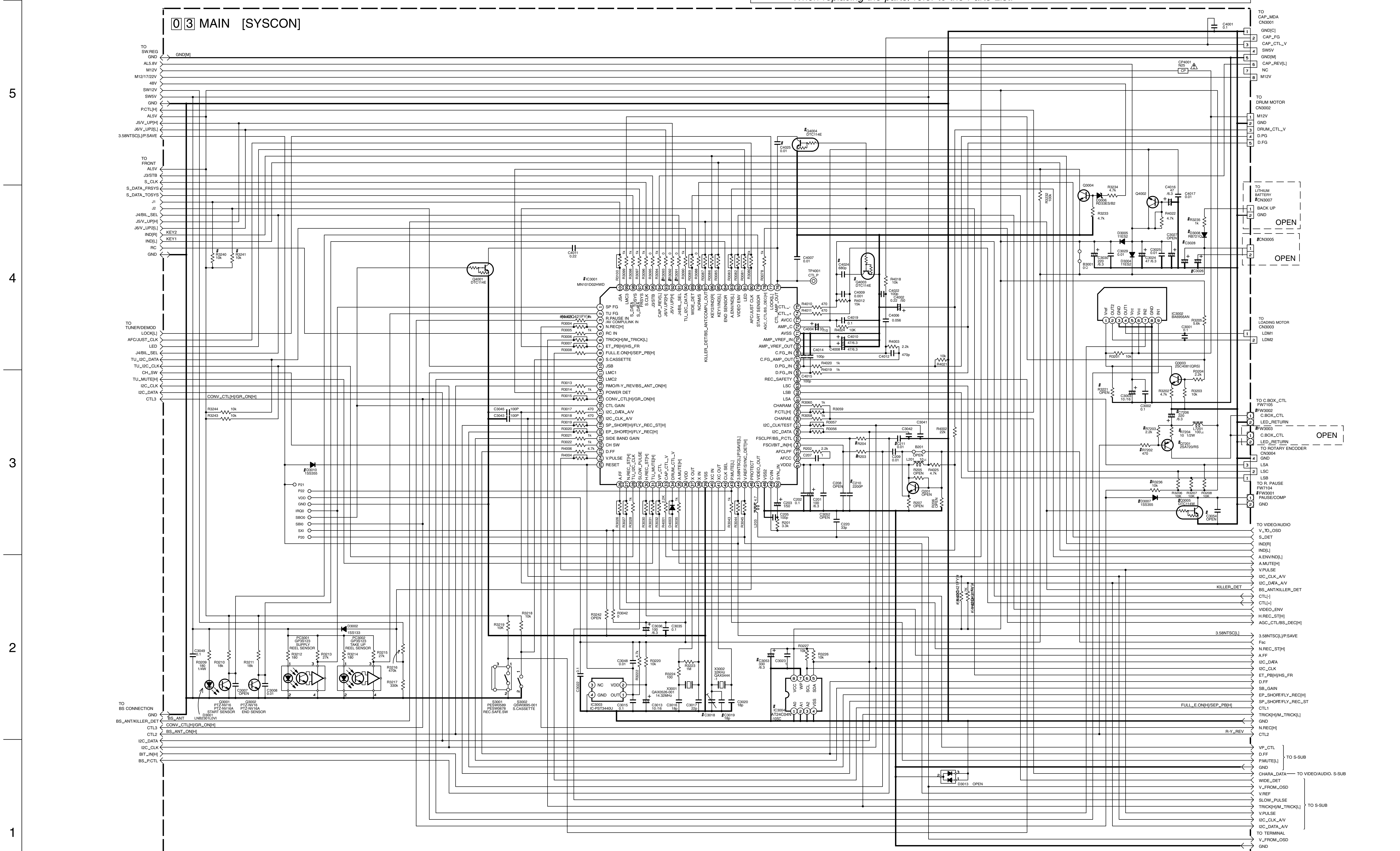
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20210001a_rev0

4.4 MAIN (SYSCON) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



0 3 MAIN [SYSCON]
TO SW.REG
GND, AL5.8V, M12V, M12/17/22V, 48V, SW12V, SW5V, GND, P.CTL[H], AL5V, J5/V_UP[H], J6/V_UP2[L], 3.58NTSC[L]/P.SAVE
TO FRONT
AL5V, J3/STB, S_CLK, S_DATA_FRSYS, S_DATA_TOSYS, J1, J2, J4/BIL_SEL, J5/V_UP[H], J6/V_UP2[L], IND[R], IND[L], RC, GND
TO TUNER/DEMOD
LOCK[L], AFC/JUST_CLK, LED, J4/BIL_SEL, TU_I2C_DATA, TU_I2C_CLK, CH_SW, TU_MUTE[H], I2C_CLK, I2C_DATA, CTL3
TO BS CONNECTION
GND, BS_ANT/KILLER_DET, CTL3, CTL2, I2C_DATA, I2C_CLK, BIT_IN[H], BS_P.CTL
IC3001 MN101D02HWD
IC3002 BA6956AN
IC3003 IC-PST3440U
IC3004 AT24C04N-10SC
TO CAP_MDA CN3001
GND[C], CAP_FG, CAP_CTL_V, SW5V, GND[M], CAP_REV[L], NC, M12V
TO DRUM MOTOR CN3002
M12V, GND, DRUM_CTL_V, D.PG, D.FG
TO LITHIUM BATTERY CN3007
BACK UP, GND
OPEN
CN3005
OPEN
TO LOADING MOTOR CN3003
LDM1, LDM2
TO C.BOX_CTL FW7105
FW3002
C.BOX_CTL, LED_RETURN
FW3003
C.BOX_CTL, LED_RETURN
OPEN
TO ROTARY ENCODER CN3004
GND, LSA, LSC, LSB
TO R. PAUSE FW7104
FW3001
PAUSE/COMP, GND
TO VIDEO/AUDIO
V_TO_OSD, S_DET, IND[R], IND[L], A.ENV/ND[L], A.MUTE[H], V.PULSE, I2C_CLK_A/V, I2C_DATA_A/V, BS_ANT/KILLER_DET, CTL[-], CTL[+], VIDEO_ENV, H.REC_ST[H], AGC_CTL/BS_DEC[H], 3.58NTSC[L]/P.SAVE, Fsc, N.REC_ST[H], A.FF, I2C_DATA, I2C_CLK, ET_PB[H]/HS_FR, D.FF, SB_GAIN, EP_SHORT/FLY_REC[H], SP_SHORT/FLY_REC_ST, CTL1, TRICK[H]/M_TRICK[L], GND, N.REC[H], CTL2
VP_CTL, D.FF, P.MUTE[L], GND — TO S-SUB
CHARA_DATA — TO VIDEO/AUDIO, S-SUB
WIDE_DET, V_FROM_OSD, V.REF, SLOW_PULSE, TRICK[H]/M_TRICK[L], V.PULSE, I2C_CLK_A/V, I2C_DATA_A/V — TO S-SUB
TO TERMINAL
V_FROM_OSD, GND
PC3001 GP3S123 SUPPLY REEL SENSOR
PC3002 GP3S123 TAKE UP REEL SENSOR
Q3001 PTZ-NV16 PTZ-NV16A START SENSOR
Q3002 PTZ-NV16 PTZ-NV16A END SENSOR
D3001 LNB2301L0VI
S3001 PESW0589 PESW0678 REC.SAFE.SW
S3002 QSW0695-001 S.CASSETTE

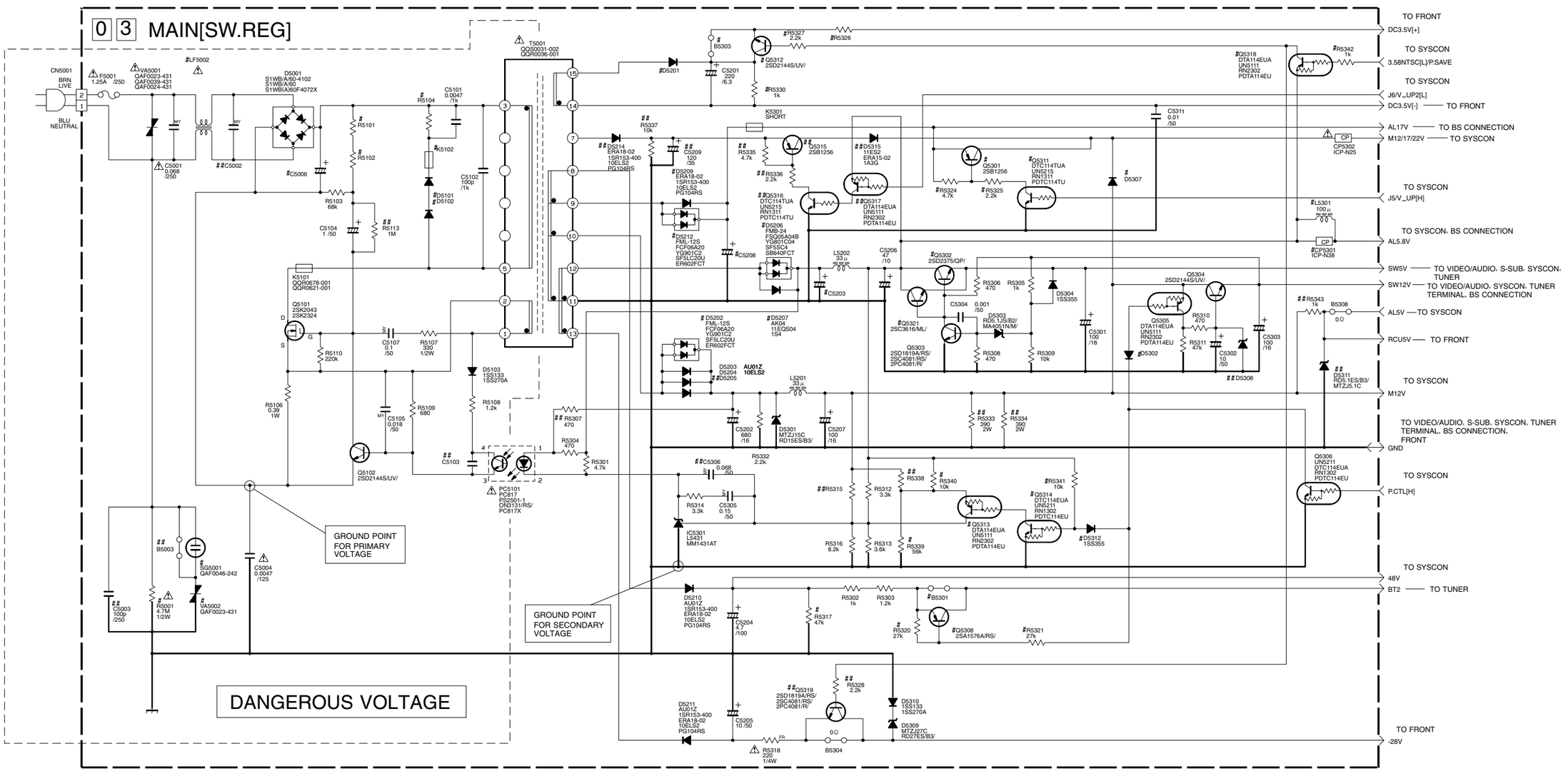
NOTES: UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.

- ELECTROLYTIC
- CERAMIC
- MYLER
- NON POLAR

p10347001a_rev0

4.5 MAIN (SW.REG) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



##MARK ELEMENT ARE NOT MOUNTED

#DIFFERENCE TABLE 1

	C5006	C5203	L5301	CP5301	D5206	D5207	R5001	Q5302	Q5321
D1	82/200	680/10	SHORT	NO	NO	YES	NO	NO	YES
D5	150/200	1200/10	NO	YES	YES	NO	NO	YES	NO
S1	150/200	1200/10	YES	NO	YES	NO	NO	YES	NO
S1U	150/200	1200/10	YES	NO	YES	NO	YES	YES	NO
S5	150/200	Oct-00	NO	YES	YES	NO	NO	YES	NO

#DIFFERENCE TABLE 2

HIGH SPEED FF/REW	C5208	D5209	D5212	D5307	D5314 Q5301 Q5311	R5324 R5325
DOM(W/O BS)	180/25	YES	NO	1.10E+03 ERA15-02 1A3G	YES	
DOM(WITH BS)	330/25	NO	YES	1.10E+03 ERA15-02 1A3G	YES	
OTHER	NO	NO	NO	SHORT	NO	

#DIFFERENCE TABLE 3

POWER SAVE	R5104	B5301 B5303	D5312 Q5308 Q5312 Q5313 Q5314	Q5318 R5317 R5320 R5321 R5327	R5330 R5339 R5340 R5341 R5342	R5101 R5102	D5302
DOM	150k 2W	NO	YES			330k	1SS355
OTHER	68k 2W	YES	NO			220k	SHORT

#DIFFERENCE TABLE 4

LEVEL IND.		D5201	R5326
-NO-	DOM	AK04 11EQS04 1S4	3.9
	OTHER	AU01Z 10ELS2	0
-YES-		AK04 11EQS04 1S4	1

SURGE	VA5002 SG5001
PH	YES
OTHER	NO

#DIFFERENCE TABLE 6

	K5102	D5101 D5102
DOM	QQR0678-001 QQR0621-001	AU01 10ELS4
OTHER	SHORT	AU01 10ELS4 1SR153-400 ERA18-04

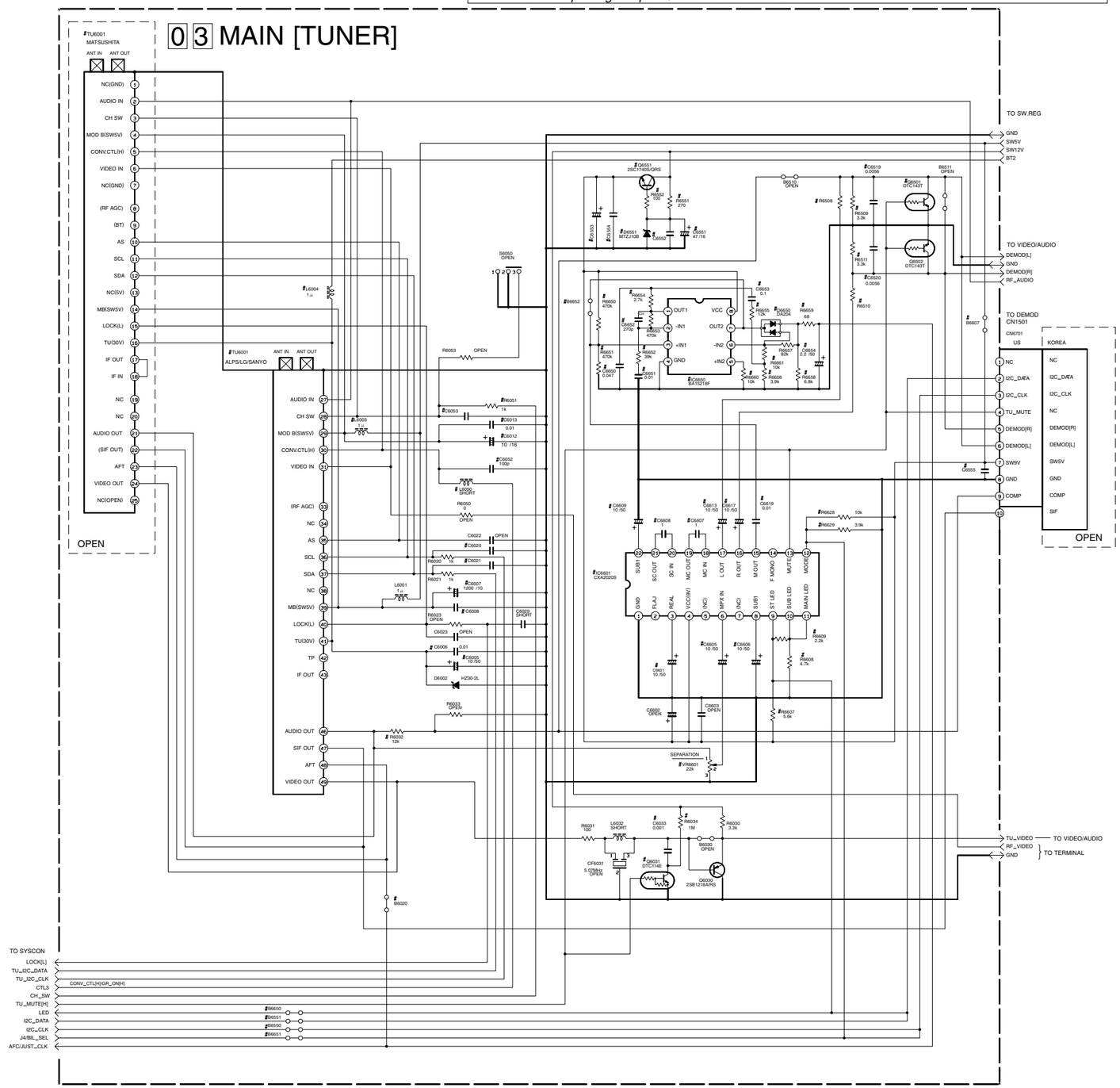
#DIFFERENCE TABLE 7

	LF5002
SVHS WITH BS	QQR0908-001 QQR0984-001
OTHER	QQR0532-001 QQR0533-001 QQR0516-001 QQR0816-001 QQR0932-001

p20184001a_rev1

4.6 MAIN (TUNER/DEMOD) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



DIFFERENCE TABLE

		JPN	US	KR
TUNER				
AFC	B6020	×	○	○
MUTE	Q6031,R6034,C6033	×	×	×
RF CONV	L6003,L6050, R6050-R6051	×	○	○
US AUDIO	R6032	×	○	×
5V	C6007	○	×	×
	C6005,C6008,C6012, C6013,C6020-C6021, C6052,C6053	×	×	×
DEMOD				
UNIT	CN6701	×	US	KR
MUTE	Q6501,Q6502	×	×	×
REG	Q6551-D6551, R6551-R6552	○	○	×
I2C	B6550-B6551	×	○	○
AUDIO OUT	R6508,R6510	12k	0	0
	R6509,R6511, C6519-C6520	○	×	×
JPN	IC6601,IC6650, D6650,VR6601, R6507-R6509, R6628,R6629, R6650-R6661,C6601, C6605-C6609,C6613, C6617,C6619, C6650-C6654 B6650,B6651	○	×	×
KR	B6607	×	×	○

NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.
ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

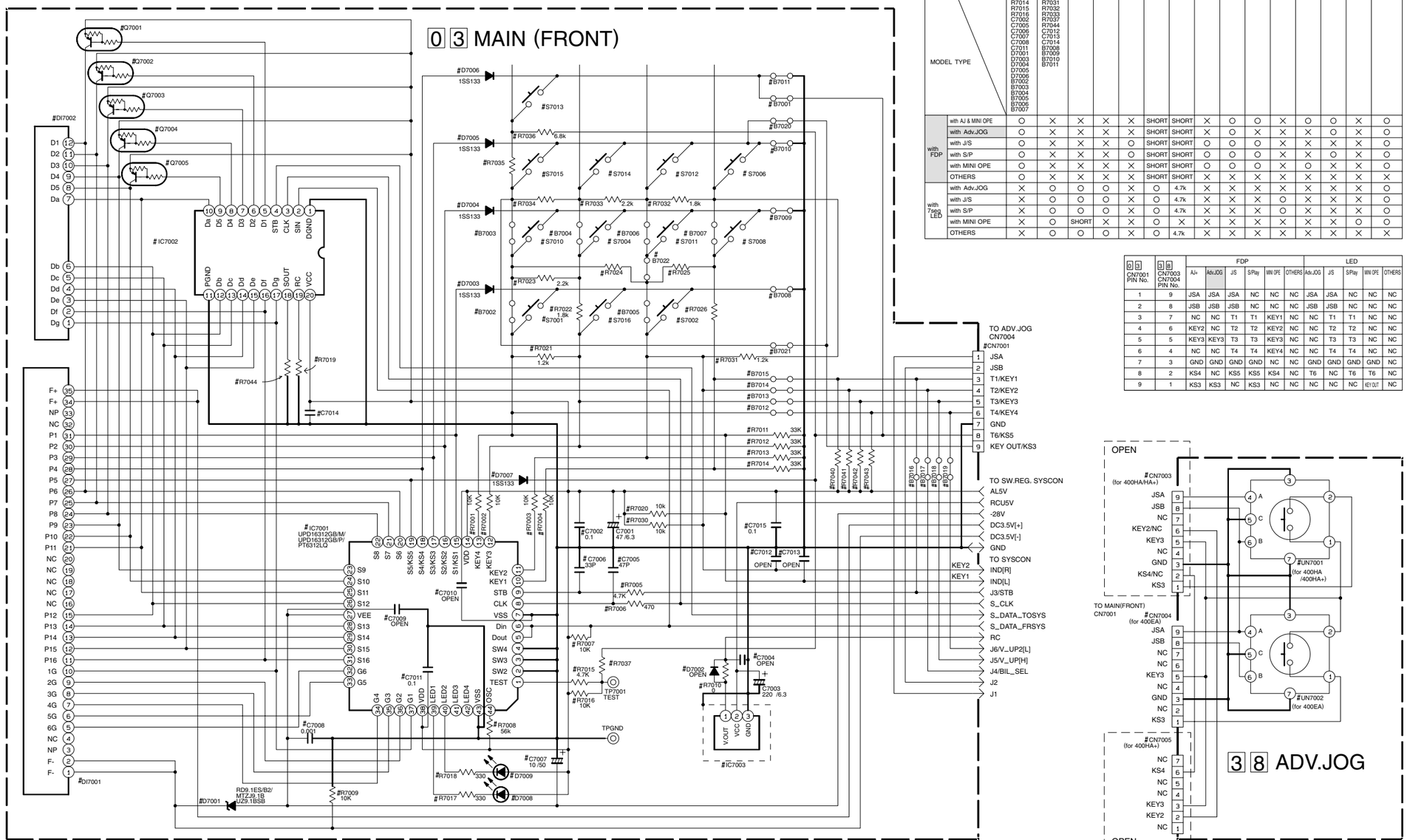
p10345001a_rev1

4.7 MAIN (FRONT) AND ADV.JOG SCHEMATIC DIAGRAMS

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.

MODEL TYPE / SYMBOL		DI7001 IC7001 R7001 R7002 R7003 R7004 R7005 R7006 R7007 R7008 R7009 R7011 R7012 R7013 R7014 R7015 R7016 C7002 C7005 C7006 C7007 C7008 C7011 D7001 D7003 D7004 D7005 D7006 B7002 B7003 B7004 B7005 B7006 B7007	DI7002 IC7002 Q7001 Q7002 Q7003 Q7004 Q7005 R7019 R7020 R7021 R7023 R7024 R7025 R7030 R7031 R7032 R7033 R7037 R7044 C7012 C7013 C7014 B7008 B7009 B7010 B7011	R7034	R7036	D7007	R7022 R7026	R7035	B7012 B7015	B7013	B7014	B7016 B7017 B7018 B7019	B7001	B7020	B7021	CN7001
with FDP	with AJ & MINI OPE	○	×	×	×	×	SHORT	SHORT	×	○	○	×	○	○	×	○
	with AdvJOG	○	×	×	×	×	SHORT	SHORT	×	○	×	×	×	○	×	○
	with J/S	○	×	×	×	○	SHORT	SHORT	○	○	○	×	×	×	×	○
	with S/P	○	×	×	×	○	SHORT	SHORT	○	○	○	×	×	○	×	○
	with MINI OPE	○	×	×	×	×	SHORT	SHORT	○	○	○	×	○	×	×	○
	OTHERS	○	×	×	×	×	SHORT	SHORT	×	×	×	×	×	×	×	×
with 7seg LED	with AdvJOG	×	○	○	○	×	○	4.7k	×	×	×	×	×	×	×	○
	with J/S	×	○	○	○	×	○	4.7k	×	×	×	○	×	×	×	○
	with S/P	×	○	○	○	×	○	4.7k	×	×	×	○	×	×	×	○
	with MINI OPE	×	○	SHORT	×	×	○	×	×	×	×	×	×	×	○	○
	OTHERS	×	○	○	○	×	○	4.7k	×	×	×	×	×	×	×	×

0 3 CN7001 PIN No.	3 8 CN7003 CN7004 PIN No.	FDP						LED				
		AJ+	AdvJOG	J/S	S/Play	MINI OPE	OTHERS	AdvJOG	J/S	S/Play	MINI OPE	OTHERS
1	9	JSA	JSA	JSA	NC	NC	NC	JSA	JSA	NC	NC	NC
2	8	JSB	JSB	JSB	NC	NC	NC	JSB	JSB	NC	NC	NC
3	7	NC	NC	T1	T1	KEY1	NC	NC	T1	T1	NC	NC
4	6	KEY2	NC	T2	T2	KEY2	NC	NC	T2	T2	NC	NC
5	5	KEY3	KEY3	T3	T3	KEY3	NC	NC	T3	T3	NC	NC
6	4	NC	NC	T4	T4	KEY4	NC	NC	T4	T4	NC	NC
7	3	GND	GND	GND	GND	NC	NC	GND	GND	GND	GND	NC
8	2	KS4	NC	KS5	KS5	KS4	NC	T6	NC	T6	T6	NC
9	1	KS3	KS3	NC	KS3	NC	NC	NC	NC	NC	KEY OUT	NC



SYMBOL / LED	R7017 D7008	R7018 D7009
for S7002	○	×
for S7016	×	○

RCU	R7010	C7004 D7002	IC7003
JVC	SHORT	×	GP1U291Q PNA4652MOOYC PIC-28143LJ
PHILIPS	SHORT	×	GP1U290Q PNA4655MOOYC PIC-28142LJ

NOTES: UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

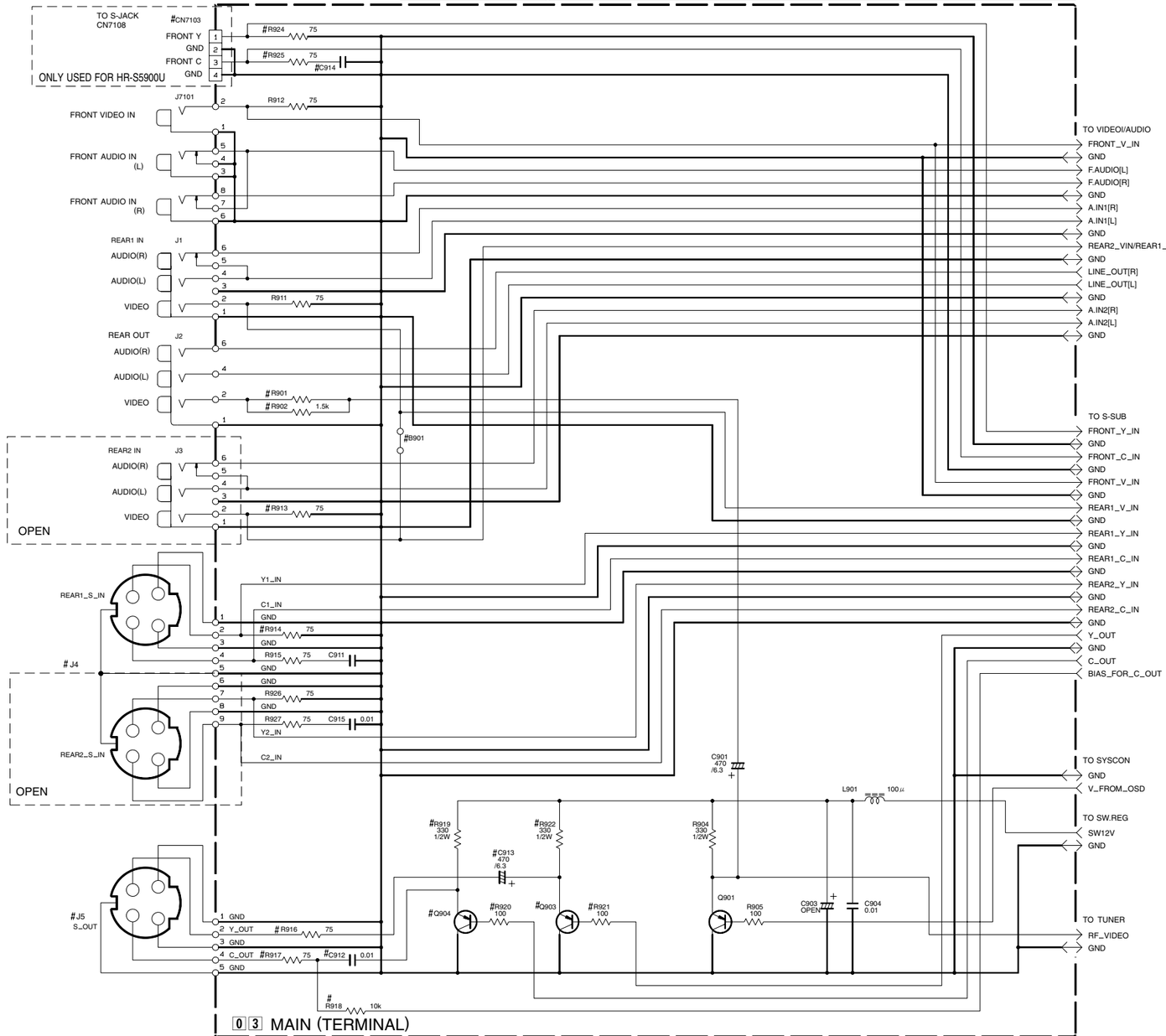
ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20204001a_rev0.1

4-15 4-16

4.8 MAIN (TERMINAL) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



DIFFERENCE TABLE

○ : Used
× : Not used

SYMBOL / MODEL	R913 J3	J4	R924 R925 CN7103	C914	R926 R927 C915	R918	C911	R902 R914-R917 R919-R922	Q903.Q904 C912.C913 J5	B901	R901
S-VHS JPN F_S_IN REAR2_IN	○	S1/S2	○	0.01	○	○	0.01	○		X	82
S-VHS JPN F_S_IN	X	S1	○	0.01	X	○	0.01	○		X	82
S-VHS US F_S_IN	X	S1	○	0Ω	X	X	0Ω	○		X	82
S-VHS US	X	S1	X	X	X	X	0Ω	○		X	82
VHS	X	X	X	X	X	X	X	X		○	75

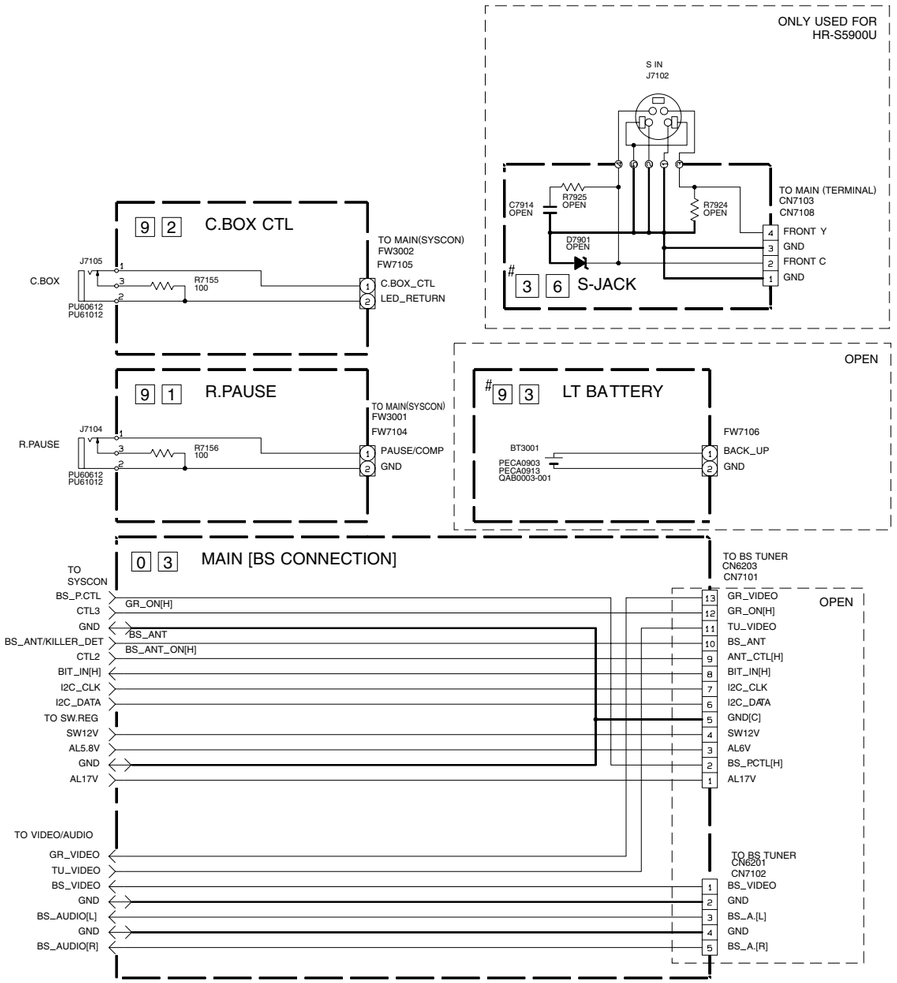
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/

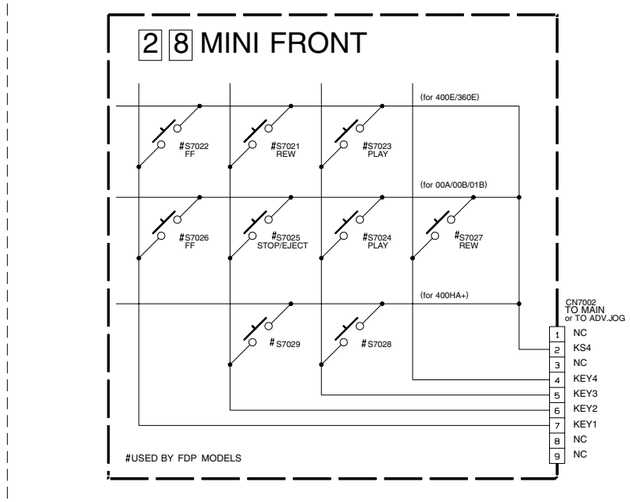
ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

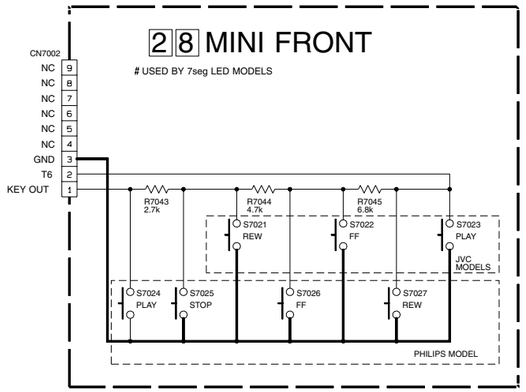
p20206001a_rev0

4.9 MAIN (BS CONNECTION), S-JACK, R.PAUSE AND C.BOX CTL SCHEMATIC DIAGRAMS

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.







0 3

	BS MODELS	GR MODELS
CN7101	1-10	1-13

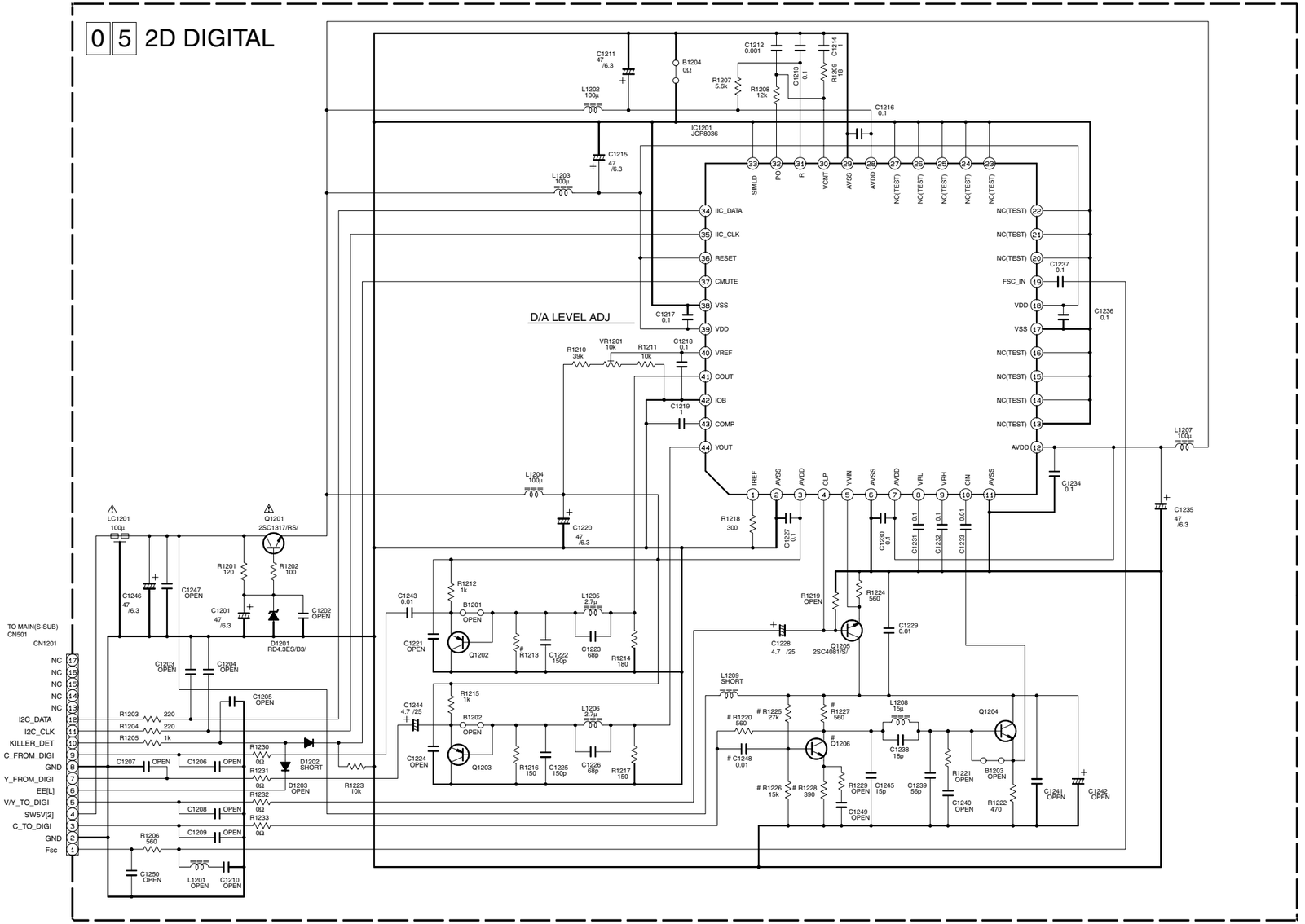
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20205001a_rev0

4.10 2D DIGITAL SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



DIFFERENCE TABLE

SYMBOL / MODEL	Q1206 R1225-R1228 C1248	R1220	R1213
PCEC	○	X	150
OTHER	X	○	180

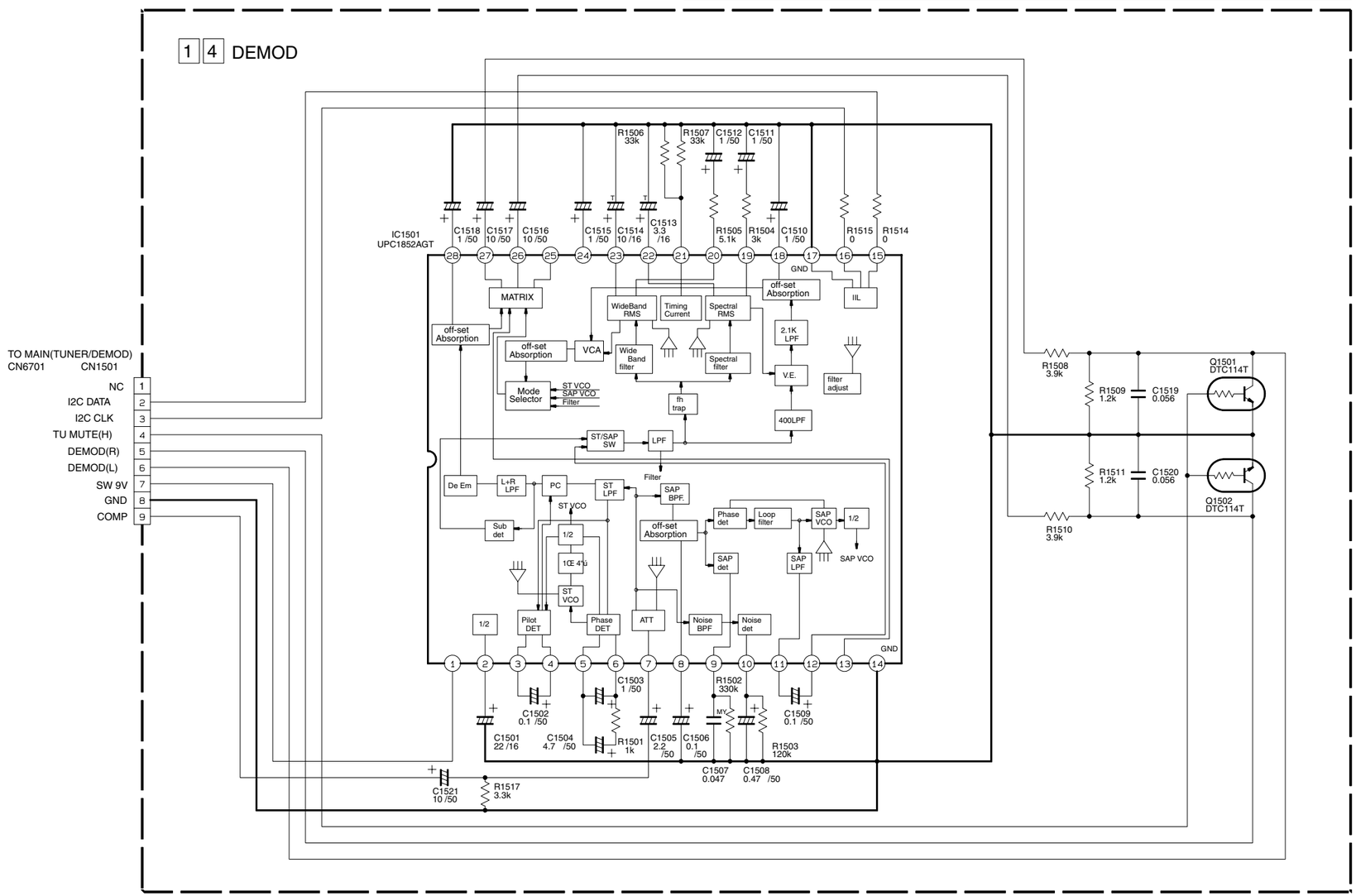
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/.
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/.

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20211001a_rev0

4.11 DEMODULATOR SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

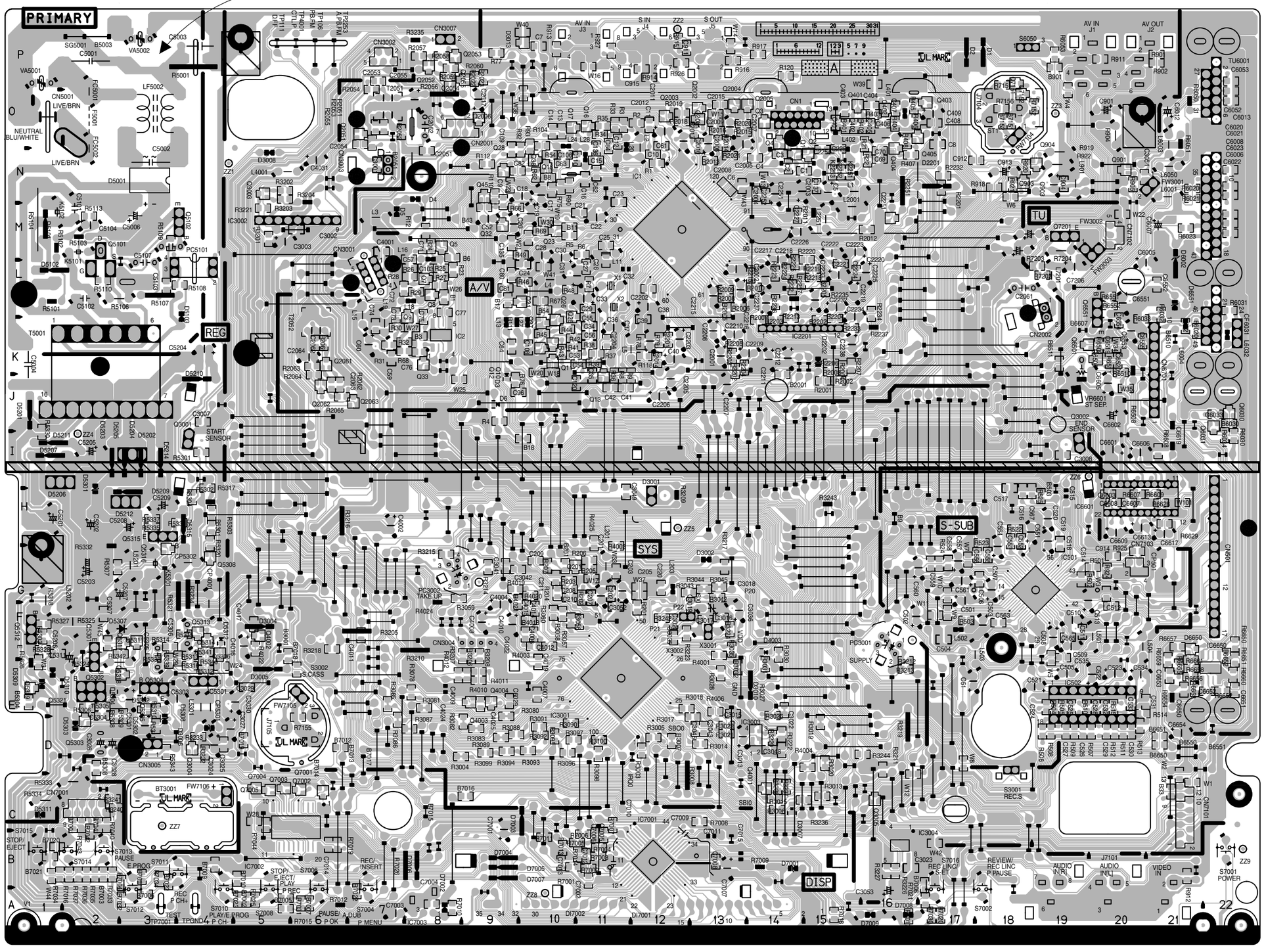
ELECTROLYTIC
CERAMIC
TANTAL

p97596_rev0

4.12 MAIN, R.PAUSE AND C.BOX CTL CIRCUIT BOARDS

<03>MAIN,<91>R.PAUSE,<92>C.BOX CTL
LPB10134-001E

CAUTION :
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE AND RATED FUSE(S).
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE CP(S) MANUFACTURED BY ROHM.
ATTENTION :
REPLACER PAR DES FUSIBLE DE MEME TYPE.



COMPONENT PARTS LOCATION GUIDE
＜MAIN, R.PAUSE AND C.BOX CTL ＞

REF.NO.	LOCATION		
CAPACITOR			
C1	B	C	15N
C2	B	C	14N
C3	B	C	14N
C4	B	C	14N
C5	A	D	15N
C6	B	C	13N
C7	B	C	10P
C8	B	C	17O
C9	B	C	9N
C10	B	C	12N
C11	B	C	12O
C12	B	C	11O
C13	B	C	10O
C14	B	C	10O
C15	B	C	11N
C16	B	C	11N
C17	A	D	10N
C18	A	D	10N
C19	A	D	10M
C20	A	D	9M
C21	B	C	11M
C22	A	D	11M
C23	B	C	11N
C24	B	C	10L
C25	B	C	11M
C26	B	C	11M
C27	B	C	11L
C28	A	D	10M
C29	B	C	11L
C30	A	D	10M
C31	A	D	11L
C32	A	D	11L
C33	A	D	11L
C34	B	C	11K
C35	B	C	11J
C36	A	D	11K
C37	A	D	12K
C38	A	D	12L
C39	B	C	12K
C40	A	D	12K
C41	B	C	11J
C42	B	C	11J
C51	A	D	17E
C52	A	D	9M
C53	B	C	10K
C54	B	C	11K
C55	B	C	11L
C56	B	C	11K
C57	B	C	8M
C59	B	C	7K
C60	A	D	7K
C61	B	C	12O
C62	B	C	11N
C63	B	C	10N
C64	B	C	9K
C69	B	C	16N
C70	B	C	16N
C71	B	C	8M
C72	B	C	7L
C73	B	C	7L
C74	B	C	7K
C75	B	C	8L
C76	B	C	8K
C77	B	C	8L
C80	B	C	9L
C81	B	C	9L
C82	B	C	9N
C84	B	C	11N
C96	B	C	10J
C103	B	C	8L
C106	B	C	10N
C108	B	C	10K
C109	B	C	9N
C110	B	C	11N
C120	B	C	11J
C135	B	C	9M
C136	B	C	11N
C137	B	C	15N
C201	A	D	11G
C202	B	C	11G
C203	A	D	11G
C205	B	C	12G
C207	B	C	11G
C208	B	C	10G
C209	B	C	10G
C210	B	C	10G
C211	B	C	10G
C220	B	C	12G
C401	B	C	15O
C402	B	C	15O
C403	B	C	15O
C404	B	C	16O
C405	B	C	16O
C406	B	C	16O
C407	B	C	16O
C408	B	C	17O
C409	A	D	17O
C501	A	D	17G
C502	A	D	16F
C503	A	D	18F
C504	B	C	17F
C505	A	D	19E
C506	B	C	18G
C507	A	D	18G
C508	A	D	19F
C509	A	D	19F
C510	A	D	19F
C511	B	C	19F
C512	B	C	20F
C513	A	D	19F
C514	B	C	19G
C515	A	D	19H
C516	B	C	18H

REF.NO.	LOCATION		
C517	B	C	18I
C518	B	C	19H
C519	A	D	19G
C520	A	D	19H
C521	A	D	19E
C522	A	D	20E
C523	A	D	20E
C524	B	C	19E
C525	B	C	19E
C526	B	C	19D
C527	B	C	19D
C528	B	C	20E
C529	B	C	20D
C530	B	C	20D
C531	B	C	21E
C532	B	C	20E
C533	B	C	20E
C534	A	D	20E
C535	B	C	19F
C551	A	D	18H
C552	B	C	18H
C553	B	C	18H
C554	A	D	18G
C555	B	C	18G
C556	B	C	18G
C557	A	D	17G
C558	B	C	17G
C559	B	C	17G
C560	A	D	17G
C561	A	D	17G
C563	B	C	18F
C565	B	C	19F
C567	B	C	19H
C901	A	D	20O
C903	A	D	19N
C904	B	C	19N
C911	B	C	12P
C912	B	C	18N
C913	A	D	18N
C914	B	C	20G
C915	B	C	12P
C2001	A	D	13K
C2002	A	D	14L
C2003	A	D	14N
C2004	B	C	14N
C2005	A	D	14O
C2006	B	C	13O
C2007	A	D	13O
C2008	A	D	13N
C2009	B	C	13O
C2010	B	C	13O
C2011	A	D	12O
C2012	A	D	12O
C2014	B	C	12K
C2015	B	C	13O
C2017	A	D	9O
C2051	B	C	8N
C2052	A	D	8O
C2053	B	C	7P
C2054	B	C	7O
C2055	A	D	8O
C2061	A	D	19L
C2062	B	C	6K
C2063	B	C	6J
C2064	A	D	6K
C2201	B	C	12K
C2202	B	C	12L
C2203	A	D	12K
C2204	B	C	11K
C2205	A	D	12J
C2206	A	D	12J
C2207	A	D	13J
C2208	A	D	13K
C2209	A	D	13K
C2210	A	D	13K
C2211	A	D	14K
C2212	A	D	14K
C2215	A	D	13L
C2216	A	D	13L
C2217	A	D	13L
C2218	A	D	14M
C2219	A	D	15L
C2220	A	D	15L
C2221	B	C	15L
C2222	A	D	15M
C2223	A	D	15M
C2224	B	C	15L
C2225	A	D	16L
C2226	A	D	14M
C2227	B	C	14M
C2232	A	D	15L
C2233	A	D	15L
C2234	A	D	15L
C2235	A	D	18M
C2236	A	D	18M
C2237	A	D	14L
C2238	A	D	15K
C2251	A	D	14N
C2252	B	C	14N
C2253	B	C	15N
C2254	B	C	15N
C3001	B	C	7N
C3002	B	C	6M
C3003	A	D	5M
C3007	B	C	4J
C3008	B	C	19I
C3013	A	D	13D
C3015	B	C	13E
C3016	B	C	13F
C3017	B	C	13F
C3018	A	D	13F
C3019	B	C	13F
C3020	B	C	12F
C3022	B	C	14D

REF.NO.	LOCATION		
C3023	B	C	16B
C3024	A	D	4D
C3025	B	C	4D
C3026	A	D	2D
C3027	A	D	4D
C3028	A	D	2D
C3029	B	C	5E
C3030	A	D	5E
C3035	B	C	12F
C3036	A	D	13F
C3041	B	C	9G
C3042	B	C	9G
C3043	B	C	13D
C3045	B	C	13D
C3048	B	C	14D
C3049	B	C	11H
C3052	B	C	11F
C3053	A	D	16A
C3054	B	C	20N
C4001	B	C	7M
C4002	A	D	7H
C4004	A	D	9F
C4006	B	C	10F
C4007	B	C	10E
C4008	A	D	9F
C4009	B	C	9E
C4010	A	D	9F
C4011	B	C	7F
C4012	B	C	10F
C4014	B	C	10F
C4015	B	C	10F
C4016	A	D	5F
C4017	B	C	5F
C4019	B	C	10E
C4022	B	C	10F
C4024	A	D	8E
C4025	B	C	9E
C4031	A	D	6N
C5001	A	D	2P
C5002	A	D	4N
C5003	A	D	4P
C5004	A	D	1K
C5006	A	D	3M
C5101	A	D	2N
C5102	A	D	2L
C5103	B	C	3L
C5104	A	D	2M
C5105	A	D	3M
C5107	A	D	3L
C5201	A	D	1H
C5202	A	D	2H
C5203	A	D	2G
C5204	A	D	4K
C5205	A	D	2I
C5206	A	D	2E
C5207	A	D	3G
C5208	A	D	3H
C5209	A	D	3H
C5301	A	D	3E
C5302	A	D	3D
C5303	A	D	3E
C5304	B	C	2E
C5305	A	D	3F
C5306	A	D	4F
C5307	B	C	2F
C5311	B	C	1F
C6005	A	D	20L
C6006	B	C	22M
C6007	A	D	21M
C6008	B	C	22M
C6012	A	D	21O
C6013	B	C	22O
C6020	B	C	22N
C6021	B	C	22N
C6022	B	C	22N
C6023	B	C	22M
C6029	B	C	9E
C6033	B	C	22J
C6052	B	C	22O
C6053	B	C	22P
C6519	B	C	20K
C6520	B	C	20K
C6551	A	D	20L
C6552	B	C	21L
C6553	A	D	20K
C6554	B	C	20K
C6555	B	C	20K
C6601	A	D	20I
C6602	A	D	20J
C6603	B	C	20H
C6605	A	D	20J
C6606	A	D	20I
C6607	B	C	20H
C6608	B	C	20H
C6609	A	D	20H
C6613	A	D	20H
C6617	A	D	21H
C6619	A	D	21I
C6650	B	C	21E
C6651	B	C	22E
C6652	B	C	22E
C6653	B	C	21E
C6654	A	D	21D
C7001	A	D	9B
C7002	B	C	11B
C7003	A	D	7A
C7004	B	C	8A
C7005	B	C	11B
C7006	B	C	11B
C7007	A	D	13B
C7008	B	C	13B
C7009	A	D	12C
C7010	A	D	11B
C7011	A	D	13B

REF.NO.	LOCATION		
C7012	B	C	11B
C7013	B	C	10B
C7014	B	C	6B
C7015	A	D	13B
C7206	A	D	19L
CONNECTOR			
CN1	A	D	14O
CN501	A	D	22I
CN2001	A	D	9O
CN2002	A	D	19L
CN3001	A	D	7L
CN3002	A	D	7P
CN3003	A	D	7N
CN3004	A	D	9F
CN3005	A	D	3D
CN3007	A	D	8P
CN5001	A	D	1O
CN6701	A	D	21J
CN7001	A	D	2C
CN7101	A	D	21B
CN7102	A	D	20M
CN7103	A	D	20G
DIODE			
D1	A	D	18P
D2	A	D	17P
D3	B	C	9J
D4	A	D	8N
D5	A	D	7M
D6	B	C	9J
D2201	A	D	17N
D2202	A	D	15K
D3001	A	D	12H
D3002	A	D	13G
D3004	A	D	5F
D3005	A	D	5E
D3006	A	D	4D
D3007	B	C	14C
D3008	A	D	5N
D3010	A	D	14E
D3013	B	C	10P
D4003	B	C	14F
D5001	B	C	3N
D5101	A	D	1M
D5102	A	D	2L
D5103	A	D	4K
D5201	A	D	1J
D5202	A	D	3I
D5203	A	D	2I
D5204	A	D	3I
D5205	A	D	3I
D5206	A	D	2I
D5207	A	D	2I
D5209	A	D	3H
D5210	A	D	4J
D5211	A	D	2I
D5212	A	D	2H
D5214	A	D	3I
D5301	A	D	2I
D5302	B	C	3E
D5303	A	D	2E
D5304	B	C	2E
D5307	A	D	2F
D5308	A	D	3D
D5309	A	D	1E
D5310	A	D	1E
D5311	A	D	1C
D5312	B	C	4F
D5315	A	D	4H
D6002	A	D	21L
D6551	A	D	21L
D6650	B	C	21F
D7001	A	D	14B
D7002	A	D	8A
D7003	A	D	10B
D7004	A	D	10B
D7005	A	D	10B
D7006	A	D	8B
D7007	A	D	10B
D7008	A	D	16A
D7009	A	D	16A
IC			
IC1	B	C	12M
IC2	B	C	8K
IC501	B	C	19G
IC502	A	D	19E
IC2201	A	D	14K
IC3001	B	C	11E
IC3002	A	D	5M
IC3003	B	C	14D
IC3004	B	C	16B
IC5301	A	D	4E
IC6601	A	D	20I
IC6650	B	C	22E
IC7001	B	C	12B
IC7002	B	C	6C
IC7003	A	D	8A
JACK			
J1	A	D	20P
J2	A	D	21P
J3	A	D	11P
J4	A	D	12P
J5	A	D	13P
J7101	A	D	20A
J7104	A	D	19O
J7105	A	D	5D
COIL			
L1	A	D	16N
L2	A	D	12O
L3	A	D	7M
L4	A	D	10L
L5	A	D	11K
L11	A	D	11M

REF.NO.	LOCATION		
L13	A	D	9K
L15	A	D	7L
L16	A	D	8M
L18	A	D	7L
L19	A	D	7K
L20	A	D	11O
L24	A	D	11N
L27	A	D	10K
L28	A	D	11N
L201	A	D	11G
L203	A	D	12G
L401	A	D	16O
L402	A	D	16O
L501	A	D	20F
L502	A	D	17F
L503	A	D	18F
L504	A	D	20F
L901	A	D	19N
L2001	A	D	16M
L2251	A	D	15M
L4001	A	D	6N
L5201	A	D	3G
L5202	A	D	2F
L5301	A	D	4D
L6001	A	D	21N
L6003	A	D	21O
L6004	A	D	21K
L6032	A	D	22K
L6050	A	D	21N
L7201	A	D	19L
TRANSISTOR			
Q1	B	C	14N
Q2	B	C	15N
Q3	B	C	14O
Q4	B	C	14O
Q5	B	C	8M
Q7	B	C	8L
Q8	B	C	8L
Q9	B	C	8L
Q10	B	C	10K
Q11	B	C	10K
Q12	B	C	10K
Q13	B	C	11J
Q16	B	C	11O
Q17	B	C	10O
Q18	B	C	10N
Q21	B	C	10L
Q23	B	C	10M
Q25	B	C	10L
Q26	B	C	10K
Q27	B	C	10K
Q28	B	C	9N
Q32	B	C	9M
Q33	B	C	8K
Q38	B	C	10N
Q45	B	C	9N
Q201	B	C	11G
Q401	B	C	15O
Q402	B	C	16O
Q403	B	C	17O
Q404	B	C	16N
Q405	B	C	17O
Q901	B	C	20N
Q903	B	C	18N
Q904	B	C	19N
Q2001	B	C	13O
Q2002	B	C	13O
Q2003	B	C	12O
Q2004	B	C	13O
Q2005	B	C	14O
Q2006	B	C	9O
Q2051	B	C	7O
Q2052	B	C	8P
Q2053	B	C	8P
Q2054	B	C	8P
Q2055	B	C	9P
Q2061	B	C	6K
Q2062	B	C	6J
Q2063	B	C	7J
Q2251	B	C	16M
Q3001	A	D	4I
Q3002	A	D	19I
Q3003	B	C	5N
Q3004	B	C	4D
Q3005	B	C	16C
Q4001	B	C	14C
Q4002	B	C	5F
Q4003	B	C	9E
Q4004	B	C	9E
Q5101	A	D	2L
Q5102	A	D	4M
Q5301	A	D	2F
Q5302	A	D	2E
Q5303	B	C	2D
Q5304	A	D	3E
Q5305	B	C	3E
Q5306	B	C	4F
Q5308	B	C	4G
Q5311	B	C	3F
Q5312	A	D	1F
Q5313	B	C	4F
Q5314	B	C	4F
Q5315	A	D	3H
Q5316	B	C	3G
Q5317	B	C	3F
Q5318	B	C	3E
Q5319	B	C	1E
Q5321	A	D	2E
Q6030	B	C	22J
Q6031	B	C	22J
Q6501	B	C	19K
Q6502	B	C	20K
Q6551	A	D	20K
Q7001	B	C	6C

REF.NO.	LOCATION		
Q7002	B	C	6C
Q7003	B	C	5C
Q7004	B	C	5C
Q7005	B	C	5C
Q7151	B	C	18P
Q7152	B	C	18O
Q7201	A	D	19M
RESISTOR			
R1	B	C	12N
R2	B	C	12O
R3	B	C	11O
R4	B	C	9J
R5	B	C	10M
R6	B	C	11M
R7	B	C	11L
R8	B	C	11J
R9	B	C	11J
R12	B	C	8M
R21	B	C	16O
R22	B	C	16N
R23	B	C	8L
R24	B	C	8M
R25	B	C	8L
R26	B	C	8L
R27	B	C	8L
R28	B	C	8L
R29	B	C	8L
R30	B	C	7K
R31	B	C	7K
R32	B	C	8K
R33	B	C	11O
R34	B	C	11O
R35	B	C	11O
R36	B	C	11J
R37	B	C	11K
R38	B	C	11K
R39	B	C	11K
R41	B	C	10K
R42	B	C	10K
R43	B	C	10K
R44	B	C	10K
R45	B	C	10K
R46	B	C	10L
R48	B	C	10L
R49	B	C	10M
R54	B	C	10N
R62	B	C	10N
R66	B	C	9M
R67	B	C	10L
R68	B	C	8K
R69	B	C	10M
R75	B	C	10N
R76	B	C	9J
R77	B	C	9P
R78	B	C	12K
R79	B	C	12K
R90	B	C	10N
R92	B	C	10N
R93	B	C	10N
R104	B	C	10O
R110	B	C	9N
R111	A	D	9L
R112	B	C	9N
R118	B	C	12K
R120	B	C	14P
R201	B	C	12F
R202	B	C	11G
R203	B	C	10G
R204	B	C	10G
R205	B	C	11G
R206	B	C	11G
R207	B	C	10G
R401	B	C	15O
R402	B	C	16O
R403	B	C	16O
R404	B	C	16O
R405	B	C	16O
R406	B	C	16O
R407	B	C	16N
R408	B	C	16O
R501	B	C	20G
R502	B	C	20G
R503	B	C	17F
R504	B	C	19E
R505	B	C	19E
R506	B	C	19D
R507	B	C	20D
R508	B	C	19D
R509	B	C	19D
R510	B	C	19E
R511	B	C	20D
R512	B	C	20D
R513	B	C	20D
R514	B	C	20E
R515	B	C	20E
R522	B	C	18H
R523	B	C	18H
R524	B	C	17G
R525	B	C	19H
R901	B	C	21P
R902	B	C	21P
R904	A	D	20O
R905	B	C	20N
R911	B	C	20P
R912	B	C	21B
R913	B	C	10P
R914	B	C	12P
R915	B	C	12P
R916	B	C	13P
R917	B	C	14P
R918	B	C	18N
R919	A	D	19N
R920	B	C	18N
R921	B	C	18N

REF.NO.	LOCATION		
R922	A	D	19N
R924	B	C	20G
R925	B	C	20G
R926	B	C	12P
R927	B	C	11P
R2001	B	C	15J
R2002	B	C	15J
R2003	B	C	15K
R2004	B	C	15K
R2005	B	C	13L
R2006	B	C	13L
R2007	B	C	14K
R2008	B	C	13L
R2009	B	C	13L
R2010	B	C	14L
R2011	A	D	15M
R2012	B	C	16M
R2013	B	C	13N
R2014	B	C	13O
R2015	B	C	13O
R2016	B	C	13O
R2017	B	C	13O
R2018	B	C	12O
R2019	B	C	12O
R2020	B	C	13O
R2021	B	C	13N
R2022	B	C	9P
R2023	B	C	9P
R2051	B	C	7O
R2052	B	C	7O
R2053	B	C	7O
R2054	B	C	7O
R2055	B	C	7O
R2056	A	D	9O
R2057	B	C	8P
R2058	B	C	8P
R2059	B	C	8P
R2060	B	C	8P
R2061	B	C	6K
R2062	B	C	6J
R2063	B	C	6K
R2064	B	C	6J
R2065	B	C	6J
R2201	B	C	17N
R2202	B	C	13K
R2203	B	C	13K
R2204	B	C	13K
R2205	B	C	13K
R2206	B	C	15K
R2207	B	C	15K
R2213	B	C	14K
R2215	B	C	14L
R2217	B	C	14L
R2218	B	C	15L
R2219	B	C	15L
R2220	B	C	15M
R2222	B	C	14L
R2223	B	C	14L
R2224	B	C	14L
R2225	B	C	14L
R2232	B	C	17N
R2233	B	C	15K
R2234	B	C	16L
R2235	A	D	14L
R2236	B	C	14L
R2237	A	D	16K
R2251	A	D	16N
R3003	B	C	12D
R3004	B	C	8D
R3005	B	C	12D
R3006	B	C	14C
R3007	B	C	12D
R3008	A	D	12C
R3013	B	C	15C
R3014	B	C	13D
R3015	B	C	14C
R3017	B	C	13D
R3018	B	C	12E
R3019	B	C	15D
R3020	B	C	15D
R3021	B	C	13D
R3022	B	C	13D
R3026	B	C	14E
R3027	B	C	14E
R3028	B	C	13E
R3030	B	C	14F
R3031	B	C	14E
R3032	B	C	13E
R3035	B	C	13F
R3042	B	C	13G
R3043	B	C	12G
R3044	B	C	13G
R3045	B	C	13G
R3056	B	C	11F
R3057	B	C	10F
R3058	B	C	10F
R3059	B	C	8G
R3060	B	C	10F
R3078	B	C	8E
R3080	B	C	9E
R3081	B	C	8E
R3082	B	C	9D
R3083	B	C	9D
R3085	B	C	7E
R3086	B	C	7D
R3087	B	C	8D
R3088	B	C	9D
R3089	B	C	9D
R3090	B	C	10D
R3091	B	C	10D
R3092	B	C	10D
R3093	B	C	10D
R3094	B	C	9D
R3095	B	C	10D

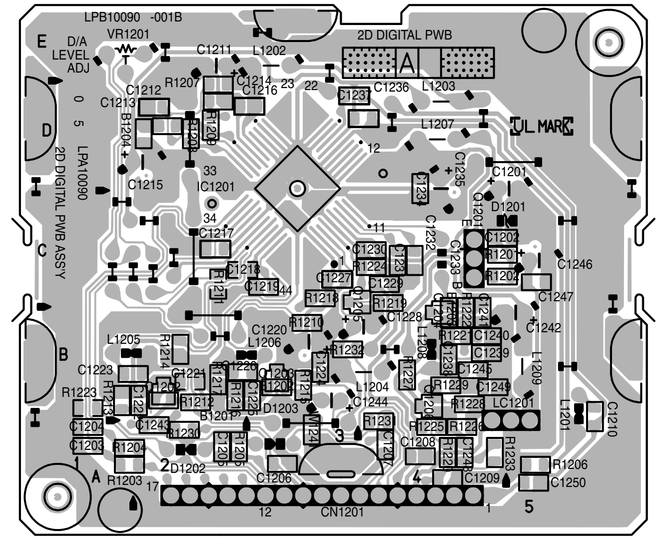
REF.NO.	LOCATION		
R3096	B	C	10D
R3097	B	C	10D
R3098	B	C	11D
R3099	B	C	9D
R3100	B	C	11D
R3201	B	C	5M
R3202	B	C	5N
R3203	B	C	5N
R3204	A	D	6N
R3205	A	D	6F
R3206	B	C	9F
R3207	B	C	9F
R3208	B	C	9F
R3209	A	D	12H
R3210	A	D	8F
R3211	B	C	16D
R3212	B	C	16E
R3213	B	C	16E
R3214	B	C	9G
R3215	B	C	8G
R3216	A	D	6H
R3217	B	C	13G
R3218	B	C	6F
R3219	A	D	16D
R3220	B	C	14D
R3221	B	C	5M
R3222	B	C	14D
R3223	B	C	12F
R3224	B	C	13F
R3226	B	C	16B
R3227	B	C	16B
R3232	B	C	4D
R3233	B	C	4D
R3234	A	D	4G
R3235	A	D	8P
R3236	B	C	15C
R3237	B	C	14C
R3238	B	C	14C
R3240	B	C	2C
R3241	B	C	2C
R3242	B	C	12F
R3243	A	D	15H
R3244	B	C	16D
R4001	B	C	13F
R4002	B	C	11G
R4003	B	C	10F
R4004	B	C	15D
R4006	B	C	13E
R4010	B	C	9E
R4011	B	C	9E
R4012	B	C	8E
R4018	B	C	10F
R4019	B	C	9G
R4020	B	C	10G
R4021	B	C	9G
R4022	B	C	5F
R4024	A	D	8G
R4025	B	C	11H
R5001	A	D	3P
R5101	A	D	1L
R5102	A	D	1M
R5103	A	D	2M
R5104	A	D	1N
R5106	A	D	2L
R5107	A	D	3L
R5108	B	C	4L
R5109	B	C	3M
R5110	B	C	2L
R5113	B	C	2M
R5301	B	C	4I
R5302	B	C	4I
R5303	B	C	4H
R5304	B	C	4H
R5305	B	C	2E
R5306	B	C	2E
R5307	B	C	2G
R5308	B	C	2E
R5309	B	C	3E
R5310	B	C	3E
R5311	B	C	3D
R5312	B	C	4E
R5313	B	C	4F
R5314	B	C	3F
R5315	B	C	4F
R5316	B	C	4E
R5317	A	D	4H
R5318	A	D	1G
R5320	B	C	4H
R5321	A	D	4G
R5324	B	C	2E
R5325	A	D	2E
R5326	A	D	1F
R5327	B	C	1F
R5328	B	C	1F
R5330	B	C	1I
R5332	A	D	3G
R5333	A	D	2C
R5334	A	D	1C
R5335	B	C	3H
R5336	B	C	4H
R5337	B	C	3H
R5338	B	C	3F
R5339	B	C	3E
R5340	B	C	4E
R5341	B	C	4F
R5342	B	C	3F
R5343	B	C	3D
R6020	B	C	21N
R6021	B	C	21N
R6023	B	C	21M
R6030	B	C	22I
R6031	B	C	22L
R6032	B	C	21L
R6033	B	C	20K

REF.NO.	LOCATION		
R6034	B	C	22I
R6050	A	D	21O
R6051	A	D	21O
R6053	B	C	19P
R6508	A	D	20J
R6509	B	C	20K
R6510	B	C	20K
R6511	B	C	20K
R6551	B	C	20L
R6552	B	C	20L
R6607	B	C	20H
R6608	B	C	21I
R6609	B	C	21H
R6628	B	C	21H
R6629	B	C	21H
R6650	B	C	22F
R6651	B	C	22E
R6652	B	C	22E
R6653	B	C	21E
R6654	A	D	21E
R6655	B	C	21E
R6656	B	C	21E
R6657	B	C	21F
R6658	B	C	21E
R6659	B	C	21E
R6660	B	C	22E
R6661	B	C	21E
R7001	B	C	10B
R7002	B	C	11B
R7003	B	C	11B
R7004	B	C	11B
R7005	B	C	11B
R7006	B	C	11B
R7007	B	C	11C
R7008	B	C	13C
R7009	A	D	14B
R7010	B	C	8A
R7011	B	C	10B
R7012	A	D	7A
R7013	B	C	10B
R7014	B	C	11B
R7015	B	C	5A
R7016	B	C	2B
R7017	B	C	16A
R7018	B	C	15A
R7019	B	C	6B
R7020	B	C	17A
R7021	B	C	17A
R7022	B	C	7A
R7023	B	C	5A
R7024	B	C	3B
R7025	B	C	5A
R7026	A	D	8B
R7030	B	C	17A
R7031	B	C	6A
R7032	B	C	3A
R7033	B	C	2B
R7034	B	C	1B
R7035	B	C	2B
R7036	B	C	2B
R7037	B	C	2B
R7040	B	C	2C
R7041	B	C	2C
R7042	B	C	2B
R7043	B	C	2C
R7044	B	C	5C
R7151	B	C	18P
R7152	B	C	19O
R7155	B	C	6D
R7156	B	C	18O
R7202	B	C	19L
R7203	B	C	19L
R7204	A	D	19M
VR6601	A	D	19K
SWITCH			
S3001	A	D	18C
S3002	A	D	6F
S6050	A	D	18P
S7001	A	D	22B
S7002	A	D	18B
S7004	A	D	7B
S7006	A	D	6B
S7008	A	D	5B
S7010	A	D	4B
S7011	A	D	4B
S7012	A	D	3B
S7013	A	D	2B
S7014	A	D	2B
S7015	A	D	1B
S7016	A	D	17B
TEST POINT			
TP106	A	D	6P
TP111	A	D	5P
TP2253	A	D	6P
TP4001	A	D	6P
TP7001	A	D	3A
TPGND	A	D	4A
OTHER			
BT3001	A	D	3C
CF6031	A	D	22K
CP501	A	D	21G
CP4001	A	D	4G
CP5301	A	D	4E
CP5302	A	D	4G
DI7001	A	D	12A
DI7002	A	D	12A
F5001	A	D	2N
FC5001	A	D	2P
FC5002	A	D	2N
FW3001	A	D	21N
FW3002	A	D	19M
FW3003	A	D	20M
FW7104	A	D	18O

REF.NO.	LOCATION		
FW7105	A	D	6E
FW7106	A	D	4C
K2251	B	C	15N
K2252	B	C	15N
K2253	B	C	15N
K5101	A	D	2M
K5102	A	D	1N
K5301	A	D	3G
LF5002	A	D	4O
PC3001	A	D	16F
PC3002	A	D	8G
PC5101	A	D	4L
SG5001	A	D	1P
T2051	A	D	7O
T2052	A	D	6K
T5001	A	D	1K
TU6001	A	D	22P
VA5001	A	D	1P
VA5002	A	D	3P
X1	A	D	11L
X2	A	D	11L
X3001	A	D	13F
X3002	A	D	13F

4.13 2D DIGITAL AND DEMODULATOR CIRCUIT BOARDS

<05>2D DIGITAL
LPB10090-001B



COMPONENT PARTS LOCATION GUIDE
＜2D DIGITAL ＞

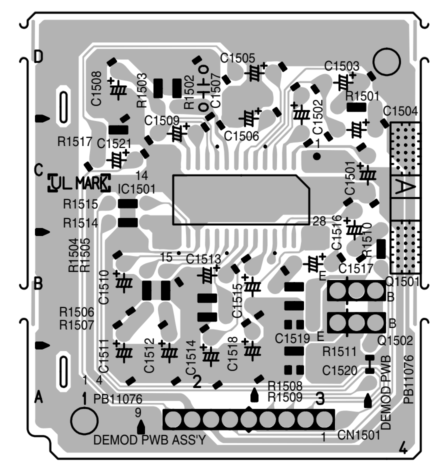
REF.NO.	LOCATION		
CAPACITOR			
C1201	A	D	5D
C1202	B	C	5C
C1203	B	C	1A
C1204	B	C	1A
C1205	B	C	2A
C1206	B	C	3A
C1207	B	C	4A
C1208	B	C	4A
C1209	B	C	4A
C1210	B	C	6B
C1211	A	D	2E
C1212	B	C	2D
C1213	B	C	2D
C1214	B	C	2D
C1215	A	D	2D
C1216	B	C	3D
C1217	B	C	2C
C1218	B	C	2C
C1219	B	C	3C
C1220	A	D	3B
C1221	B	C	2B
C1222	B	C	2B
C1223	B	C	2B
C1224	B	C	3B
C1225	B	C	3B
C1226	B	C	2B
C1227	B	C	3C
C1228	A	D	3B
C1229	B	C	4C

REF.NO.	LOCATION		
C1230	B	C	4C
C1231	B	C	4C
C1232	B	C	4C
C1233	A	D	4C
C1234	B	C	4D
C1235	A	D	4D
C1236	B	C	4D
C1237	B	C	3D
C1238	B	C	4B
C1239	B	C	5B
C1240	B	C	5B
C1241	B	C	5B
C1242	A	D	5B
C1243	B	C	2A
C1244	A	D	3B
C1245	B	C	5B
C1246	A	D	5C
C1247	B	C	5C
C1248	B	C	4A
C1249	B	C	5B
C1250	B	C	5A
CONNECTOR			
CN1201	A	D	5A
DIODE			
D1201	A	D	5C
D1202	A	D	2A
D1203	A	D	3A
IC			
IC1201	B	C	3D

REF.NO.	LOCATION		
COIL			
L1201	A	D	5A
L1202	A	D	3E
L1203	A	D	4D
L1204	A	D	4B
L1205	A	D	2B
L1206	A	D	3B
L1207	A	D	4D
L1208	A	D	4B
L1209	A	D	5B
TRANSISTOR			
Q1201	A	D	5C
Q1202	B	C	2B
Q1203	B	C	3B
Q1204	B	C	4B
Q1205	B	C	3C
Q1206	B	C	4B
RESISTOR			
R1201	B	C	5C
R1202	B	C	5C
R1203	B	C	1A
R1204	B	C	1A
R1205	B	C	2A
R1206	B	C	5A
R1207	B	C	2D
R1208	B	C	2D
R1209	B	C	2D
R1210	B	C	3B
R1211	B	C	2C

REF.NO.	LOCATION		
R1212	B	C	2B
R1213	B	C	1B
R1214	B	C	2B
R1215	B	C	3B
R1216	B	C	2B
R1217	B	C	2B
R1218	B	C	3C
R1219	B	C	4C
R1220	B	C	4A
R1221	B	C	4B
R1222	B	C	4B
R1223	B	C	1B
R1224	B	C	4C
R1225	B	C	4A
R1226	B	C	4A
R1227	B	C	4B
R1228	B	C	4B
R1229	B	C	4B
R1230	B	C	2A
R1231	B	C	4B
R1232	B	C	3B
R1233	B	C	5A
VR1201	A	D	1E
OTHER			
LC1201	A	D	5B

<14>DEMODULATOR
PB11076



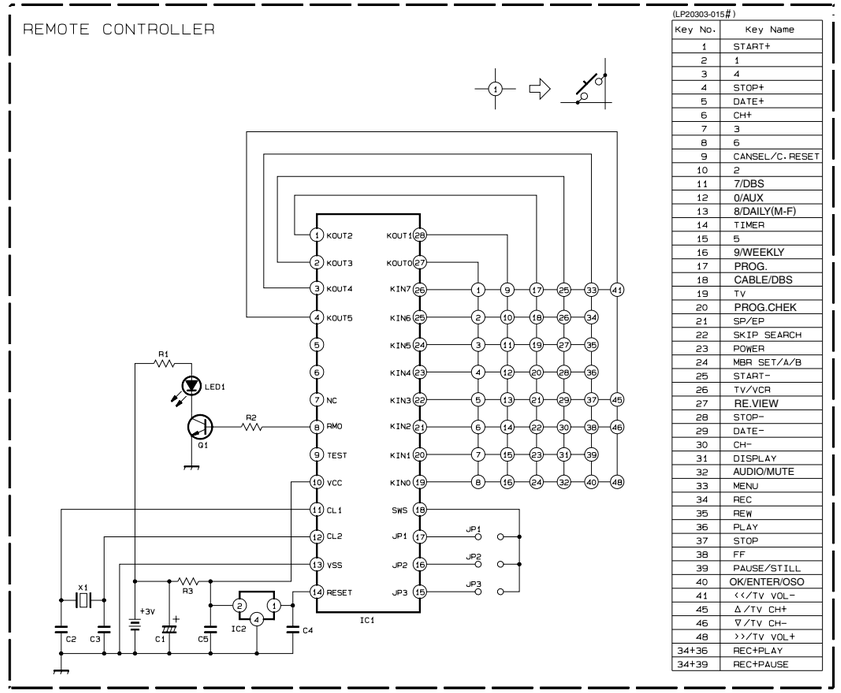
COMPONENT PARTS LOCATION GUIDE
＜DEMODULATOR＞

REF.NO.	LOCATION		
CAPACITOR			
C1501	A	D	4C
C1502	A	D	3D
C1503	A	D	4D
C1504	A	D	4C
C1505	A	D	3D
C1506	A	D	3C
C1507	A	D	2C
C1508	A	D	1D
C1509	A	D	2C
C1510	A	D	1B
C1511	A	D	1A
C1512	A	D	2A
C1513	A	D	2B
C1514	A	D	2A
C1515	A	D	3B
C1516	A	D	3C
C1517	A	D	3B
C1518	A	D	3A
C1519	A	D	3B
C1520	A	D	3A
C1521	A	D	2C
CONNECTOR			
CN1501	A	D	3A

REF.NO.	LOCATION		
IC			
IC1501	B	C	2C
TRANSISTOR			
Q1501	A	D	3B
Q1502	A	D	3B
RESISTOR			
R1501	A	D	4C
R1502	A	D	2C
R1503	A	D	2C
R1504	A	D	2B
R1505	A	D	2B
R1506	A	D	2B
R1507	A	D	2B
R1508	A	D	3B
R1509	A	D	3B
R1510	A	D	4B
R1511	A	D	3A
R1514	A	D	2B
R1515	A	D	2C
R1517	A	D	2C

4.14 REMOTE CONTROLLER SCHEMATIC DIAGRAM

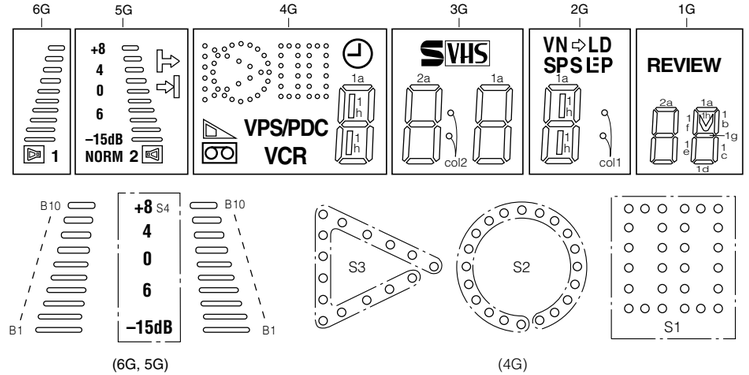
NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.



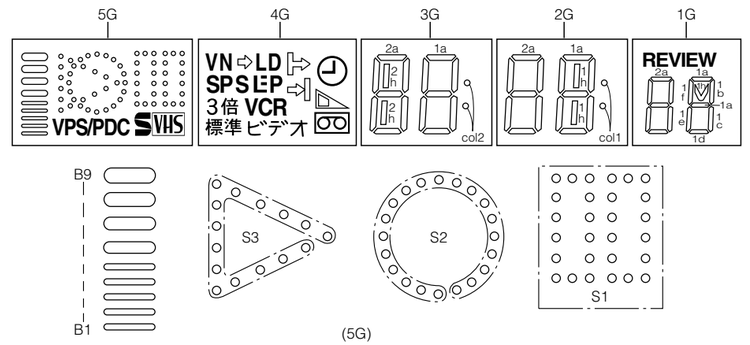
Key No.	Key Name
1	START+
2	1
3	4
4	STOP+
5	DATE+
6	CH+
7	3
8	6
9	CANSEL/C.RESET
10	2
11	7/DBS
12	0/AUX
13	8/DAILY(M-F)
14	TIMER
15	5
16	9/WEEKLY
17	PROG.
18	CABLE/DBS
19	TV
20	PROG.CHEK
21	SP/EP
22	SKIP SEARCH
23	POWER
24	MBR SET/A/B
25	START−
26	TV/VCR
27	RE.VIEW
28	STOP−
29	DATE−
30	CH−
31	DISPLAY
32	AUDIO/MUTE
33	MENU
34	REC
35	REW
36	PLAY
37	STOP
38	FF
39	PAUSE/STILL
40	OK/ENTER/OSO
41	‹‹/TV VOL−
45	Δ/TV CH+
46	∇/TV CH−
48	››/TV VOL+
34+36	REC+PLAY
34+39	REC+PAUSE

4.15 FDP GRID ASSIGNMENT AND ANODE CONNECTION

[A] (FDP with audio level indicator)



[B] (FDP without audio level indicator)



ANODE CONNECTION [A]

	6G	5G	4G	3G	2G	1G
P 1	—	⇨	S2	1a	1a	1a
P 2	—	⇨|	S1	1b	1b	1b
P 3	—	S4	S3	1f	1f	1f
P 4	—	NORM	VPS/PDC	1g	1g	1g
P 5	1	2	🕘	1c	1c	1c
P 6	▷	◁	◺	1e	1e	1e
P 7	B10	B10	📼	1d	1d	1d
P 8	B9	B9	VCR	col2	1h	1h
P 9	B8	B8	1a	2a	col1	2a
P10	B7	B7	1b	2b	⇨	2b
P11	B6	B6	1f	2f	VN	2f
P12	B5	B5	1g	2g	LD	2g
P13	B4	B4	1c	2c	SP	2c
P14	B3	B3	1e	2e	S (SEP)	2e
P15	B2	B2	1d	2d	: (SEP)	2d
P16	B1	B1	1h	S-VHS	LP (SEP)	REVIEW

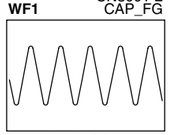
ANODE CONNECTION [B]

	5G	4G	3G	2G	1G
P 1	S2	⇨	1a	1a	1a
P 2	S1	⇨|	1b	1b	1b
P 3	S3	3倍	1f	1f	1f
P 4	VPS/PDC	標準	1g	1g	1g
P 5	S-VHS	🕘	1c	1c	1c
P 6	—	◺	1e	1e	1e
P 7	—	📼	1d	1d	1d
P 8	B9	VCR	col2	1h	1h
P 9	B8	ビデオ	2a	2a	2a
P10	B7	⇨	2b	2b	2b
P11	B6	VN	2f	2f	2f
P12	B5	LD	2g	2g	2g
P13	B4	SP	2c	2c	2c
P14	B3	S (SEP)	2e	2e	2e
P15	B2	: (SEP)	2d	2d	2d
P16	B1	LP (SEP)	2h	col1	REVIEW

4.16 WAVEFORMS

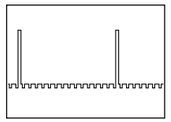
< SYSCON >

WF1 CN3001-2 CAP_FG



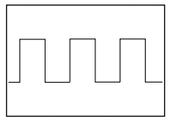
REC/PB 2.9 Vp-p
50 mV/0.5 msec/DIV

WF2 CN3002-4 D.PG



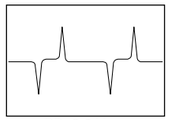
REC/PB 4.5 Vp-p
0.1 V/10 msec/DIV

WF3 CN3002-5 D.FG



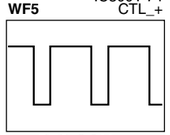
REC/PB 4.2 Vp-p
0.1 V/1 msec/DIV

WF4 TP4001 CTL.P



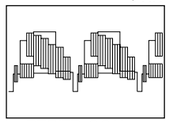
PB 3.0 Vp-p
0.1 V/10 msec/DIV

WF5 IC3001-74 CTL_+



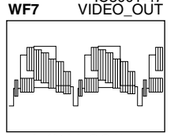
REC 3.6 Vp-p
1.0 V/10 msec/DIV

WF6 IC3001-49 CVIN



REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

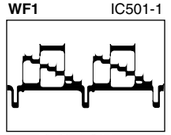
WF7 IC3001-47 VIDEO_OUT



REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

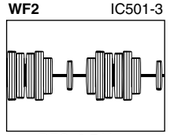
< S-SUB >

WF1 IC501-1



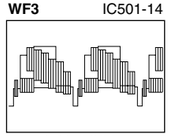
REC 1.0 Vp-p
20 mV/20 µsec/DIV

WF2 IC501-3



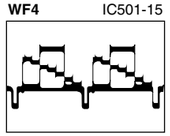
REC 0.7 Vp-p
20 mV/20 µsec/DIV

WF3 IC501-14



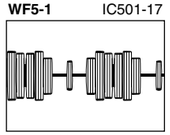
REC 1.2 Vp-p
50 mV/20 µsec/DIV

WF4 IC501-15



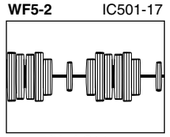
REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

WF5-1 IC501-17



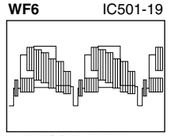
REC 1.4 Vp-p
50 mV/20 µsec/DIV

WF5-2 IC501-17



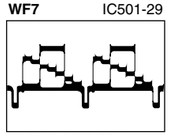
PB 1.2 Vp-p
50 mV/20 µsec/DIV

WF6 IC501-19



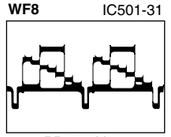
REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

WF7 IC501-29



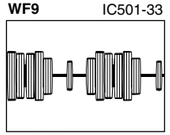
REC/PB 0.52 Vp-p
20 mV/20 µsec/DIV

WF8 IC501-31



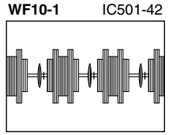
PB 0.5 Vp-p
20 mV/20 µsec/DIV

WF9 IC501-33



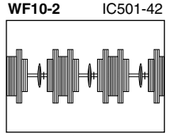
REC 0.68 Vp-p
20 mV/20 µsec/DIV

WF10-1 IC501-42



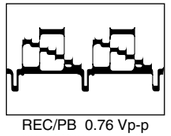
REC 0.57 Vp-p
20 mV/20 µsec/DIV

WF10-2 IC501-42



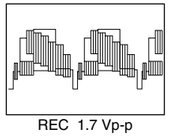
PB 0.64 Vp-p
20 mV/20 µsec/DIV

WF11 IC501-43



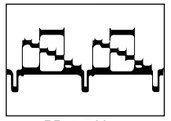
REC/PB 0.76 Vp-p
20 mV/20 µsec/DIV

WF12-1 IC501-45



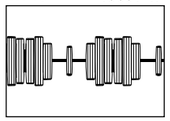
REC 1.7 Vp-p
50 mV/20 µsec/DIV

WF12-2 IC501-45



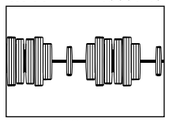
PB 1.7 Vp-p
50 mV/20 µsec/DIV

WF13 IC501-47



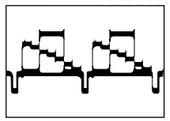
PB 1.0 Vp-p
50 mV/20 µsec/DIV

WF14 IC501-48



PB 0.7 Vp-p
20 mV/20 µsec/DIV

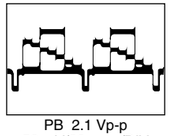
WF15 IC501-56



PB 2.1 Vp-p
50 mV/20 µsec/DIV

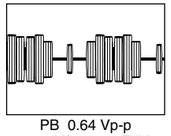
< VIDEO >

WF1 IC1-27



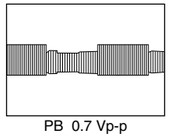
PB 2.1 Vp-p
50 mV/20 µsec/DIV

WF2 IC1-30



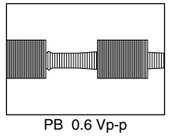
PB 0.64 Vp-p
20 mV/20 µsec/DIV

WF3 IC1-1



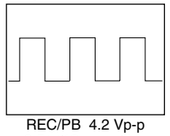
PB 0.7 Vp-p
50 mV/5 msec/DIV

WF4 TP106 PB.FM



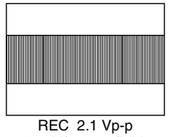
PB 0.6 Vp-p
0.1 V/5 msec/DIV

WF5 TP111 D.FF



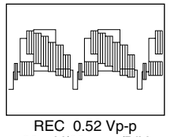
REC/PB 4.2 Vp-p
0.5 V/10 msec/DIV

WF6 IC1-105



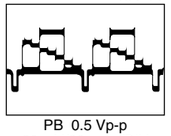
REC 2.1 Vp-p
0.1 V/1 msec/DIV

WF7-1 IC1-14



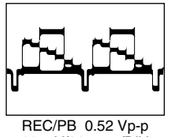
REC 0.52 Vp-p
20 mV/20 µsec/DIV

WF7-2 IC1-14



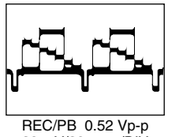
PB 0.5 Vp-p
20 mV/20 µsec/DIV

WF8 IC1-13



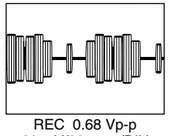
REC/PB 0.52 Vp-p
20 mV/20 µsec/DIV

WF9 IC1-11



REC/PB 0.52 Vp-p
20 mV/20 µsec/DIV

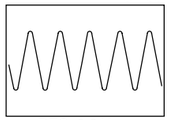
WF10 IC1-16



REC 0.68 Vp-p
20 mV/20 µsec/DIV

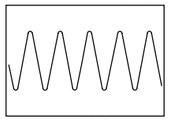
< AUDIO >

WF1 IC1-80



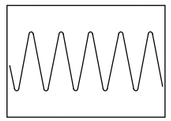
REC 0.2 Vp-p
5 mV/0.5 msec/DIV

WF2 IC1-62



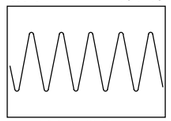
REC/PB 0.9 Vp-p
20 mV/0.5 msec/DIV

WF3 IC1-52



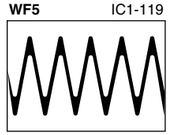
REC 0.11 Vp-p
2 mV/0.5 msec/DIV

WF4 IC1-48



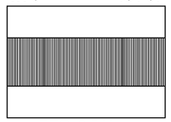
PB 0.72 Vp-p
20 mV/0.5 msec/DIV

WF5 IC1-119



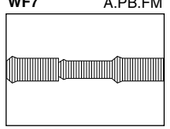
REC 0.8 Vp-p
20 mV/0.5 msec/DIV

WF6 IC1-97



REC 2.5 Vp-p
0.1 V/5 msec/DIV

WF7 TP2253 A.PB.FM



PB 0.8 Vp-p
50 mV/5 msec/DIV

4.17 VOLTAGE CHARTS

<MAIN>

MODE PIN NO.	REC	PLAY
IC1		
1	1.6	2.1
2	2.8	2.8
3	2.6	2.6
4	1.9	1.5
5	1.9	1.5
6	2.4	2.1
7	1.5	0.8
8	0	0
9	2.7	3.1
10	2.4	2.4
11	3.1	3.1
12	2.8	2.4
13	3.1	3.1
14	3.6	2.4
15	0	0
16	2.8	2.8
17	1.5	1.5
18	2.8	2.8
19	0.9	1.1
20	2.8	2.8
21	1.5	1.9
22	2.8	2.8
23	3.1	2.9
24	5.0	5.0
25	0.4	0.4
26	0	0
27	1.3	2.3
28	2.8	2.4
29	1.9	1.9
30	2.1	2.1
31	0	0
32	2.4	2.4
33	5.0	5.0
34	2.7	2.4
35	5.0	5.0
36	2.4	2.4
37	2.3	2.8
38	0.2	0.3
39	1.3	1.2
40	1.7	1.7
41	2.7	2.7
42	2.2	2.2
43	0	0
44	2.1	2.1
45	3.4	3.4
46	3.8	3.8
47	2.9	2.9
48	2.6	2.6
49	5.0	5.0
50	2.5	2.5
51	2.8	2.8
52	2.3	2.3
53	2.3	2.3
54	2.4	2.4
55	2.2	2.2
56	0.5	0.5
57	2.3	2.3
58	8.8	8.8
59	4.5	4.5
60	4.5	4.5
61	4.6	4.5
62	4.5	4.4
63	2.3	2.3
64	2.3	2.3
65	0.7	0.7
66	0.7	0.7
67	3.3	3.3
68	3.3	3.3
69	2.3	2.3
70	0	0
71	0.2	0.2
72	0.2	0.2
73	0.2	0.2
74	2.3	2.3
75	2.7	2.7
76	0	0
77	2.7	2.7
78	0.2	0.2
79	0.2	0.2
80	0.2	0.2
81	2.3	2.3
82	0.7	0.8
83	0	0
84	2.3	2.3
85	2.3	2.3
86	2.3	2.3
87	1.7	1.8
88	2.3	2.3
89	2.3	2.3
90	2.3	2.3
91	0.1	0.1
92	0	0
93	0	2.4
94	0	2.0
95	0	0
96	2.5	2.3
97	2.7	2.3
98	2.6	2.3
99	5.0	5.0
100	5.0	5.0
101	0	0
102	0	0
103	0	0
104	2.3	2.3
105	2.5	2.3
106	2.3	2.3
107	5.0	5.0
108	0	0
109	0	0
110	0	0
111	0	2.7
112	2.5	2.5
113	0.5	0.5
114	0	0
115	2.6	2.6
116	2.5	2.5
117	2.5	2.5
118	0	0
119	2.5	2.5
120	0	0
IC501		
1	2.8	2.8
2	0	0
3	2.1	2.1
4	4.9	4.9
5	2.8	2.8
6	0	0
7	2.8	2.8
8	0.1	0
9	2.8	2.8
10	0	0
11	2.1	2.1
12	2.8	2.8
13	0	0
14	2.8	2.8
15	2.3	2.3
16	2.7	2.7
17	2.4	2.4
18	0	0
19	2.3	2.3
20	0	0
21	3.5	3.5
22	2.7	2.7
23	2.9	2.1
24	2.8	2.8
25	2.8	2.8
26	4.9	4.9
27	3.0	3.0
28	2.4	2.3
29	2.5	2.3
30	4.9	4.9
31	2.7	3.0
32	0.1	4.9
33	2.8	2.8
34	2.8	2.8
35	2.8	2.8
36	2.8	2.8
37	0	0
38	3.7	3.7
39	3.3	3.3
40	2.8	2.8
41	2.6	2.6
42	2.8	2.8
43	3.3	3.3
44	2.0	1.9
45	2.0	2.0
46	4.9	4.9
47	0.5	2.4
48	2.8	2.8
49	0	0
50	2.8	2.8
51	2.9	2.9
52	2.4	2.4
53	3.1	3.1
54	2.3	2.4
55	1.9	1.1
56	2.5	3.4
IC502		
1	2.0	2.0
2	1.4	4.9
3	3.3	3.3
4	3.4	3.4
5	4.9	4.9
6	2.2	2.2
7	2.0	2.0
8	4.9	4.9
9	1.5	1.5
10	2.9	2.8
11	2.9	2.8
12	2.9	2.8
13	0	0
14	2.8	2.8
15	2.8	2.8
16	1.9	2.0
17	1.9	2.0
18	1.9	2.0
IC3001		
1	-	-
2	-	-
3	0.6	0.6
4	4.8	0
5	4.8	4.8
6	0	0
7	0	0
8	4.8	0
9	0	0
10	4.8	4.8
11	0	0
12	0	0
13	4.8	4.8
14	0	0
15	0	4.8
16	4.8	4.8
17	3.7	3.7
18	3.2	3.2
19	4.8	0
20	4.8	0
21	0.9	1.1
22	4.3	4.3
23	2.4	2.4
24	0	0
25	-	-
26	0	2.4
27	4.8	0
28	4.8	4.8
29	0	0
30	4.8	4.8
31	4.8	4.8
32	0	0
33	2.5	2.5
34	1.4	1.4
35	0	0
36	4.8	4.8
37	-	-
38	-	-
39	2.4	0
40	-	-
41	-	-
42	0	0
43	4.8	4.8
44	0	0
45	4.8	4.8
46	4.4	4.4
47	2.3	2.3
48	0	0
49	2.3	2.3
50	2.5	2.5
51	5.0	5.0
52	2.5	2.5
53	2.5	2.5
54	0	0
55	0	0
56	4.5	4.5
57	4.5	4.5
58	0	0
59	4.8	4.8
60	0	0
61	0	0
62	4.9	4.9
63	4.9	4.9
64	4.9	4.9
65	2.6	2.6
66	0.4	0.4
67	2.4	2.4
68	2.4	2.4
69	2.4	2.4
70	2.4	2.4
71	0	0
72	2.4	2.4
73	4.9	4.9
74	2.9	2.9
75	1.9	2.4
76	2.4	2.4
77	0	0
78	0	0
79	0	0
80	1.1	1.1
81	0	0
82	0	2.7
83	0	2.0
84	4.9	4.9
85	0	0
86	0	0
87	-	-
88	0	0
89	0	0
90	4.9	4.9
91	0	0
92	0	0
93	0	0
94	4.9	4.9
95	3.8	3.8
96	4.5	4.5
97	0.4	0.4
98	0.1	0.1
99	0	0
100	4.9	4.9
IC3002		
1	7.3	7.3
2	0.1	0.1
3	0	0
4	0.1	0.1
5	11.6	11.6
6	11.6	11.6
7	0	0
8	0	0
9	0	0
IC3003		
1	4.9	4.9
2	4.9	4.9
3	0	0
4	0	0
IC3004		
1	0	0
2	0	0
3	0	0
4	0	0
IC5301		
1	2.4	2.4
2	0	0
3	4.4	4.4
IC7001		
1	4.9	4.9
2	0	0
3	0	0
4	0	0
5	0.7	0.7
6	0.7	0.7
7	0	0
8	4.5	4.5
9	4.5	4.5
10	0	0
11	0	0
12	0	0
13	0	0
14	4.9	4.9
15	-	-
16	-	-
17	-	-
18	-	-
19	-	-
20	-	-
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-27.4	-27.4
28	-	-
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	4.9	4.9
39	4.9	4.9
40	4.9	4.9
41	4.9	4.9
42	4.9	4.9
43	0	0
44	2.6	2.6
IC7003		
1	4.9	4.9
2	4.9	4.9
3	0	0
CN1		
1	0	0
2	0	0
3	0	0
4	0	0
5	2.4	2.4
6	2.4	2.4
7	2.4	2.4
8	2.4	2.4
9	2.7	2.4
10	2.7	2.4
11	2.7	2.4
12	0	0
13	0	0
CN501		
1	3.7	3.7
2	0	0
3	0.5	2.4
4	5.0	5.0
5	2.0	2.0
6	2.4	2.4
7	2.4	2.4
8	2.4	2.4
9	2.7	2.4
10	2.7	2.4
11	2.7	2.4
12	0	0
13	0	0
14	4.9	4.9
15	2.4	2.4
16	2.4	2.4
17	0	0
CN6701		
1	0	0
2	4.5	4.5
3	4.5	4.5
4	4.8	4.8
5	0	0
6	0	0
7	8.9	8.9
8	0	0
9	2.3	2.3
CN7001		
1	4.9	4.9
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	3.0	3.0
CN7103		
1	0	0
2	0	0
3	0	0
4	0	0
FW3001		
1	0	0
2	0	0
FW3002		
1	0	0
2	0	0
15	2.4	2.4
16	0	0
17	0	0
CN2001		
1	0.1	0.1
2	0	0
3	0	0
4	0	0
5	0	0
6	2.3	2.3
7	2.6	2.3
CN2002		
1	0	0
2	0	0
CN3001		
1	0	0
2	2.5	2.5
3	2.5	2.5
4	5.0	5.0
5	0	0
6	4.9	4.9
7	-	-
8	11.6	11.6
CN3002		
1	11.6	11.6
2	0	0
3	1.3	1.3
4	0.3	0.3
5	2.6	2.6
CN3003		
1	0.2	0.2
2	0.3	0.3
CN3004		
1	4.9	4.9
2	4.9	4.9
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
CN6701		
1	0	0
2	0	0
FW7105		
1	0	0
2	0	0

<S-JACK> [HR-S5900U/U(C)]

MODE PIN NO.	REC	PLAY
CN7108		
1	0	0
2	0	0
3	0	0
4	0	0

<ADV.JOG>

MODE PIN NO.	REC	PLAY
CN7004		
1	4.9	4.9
2	4.9	4.9
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0

<R.PAUSE>

MODE PIN NO.	REC	PLAY
FW7104		
1	0	0
2	0	0

<C.BOX CTL>

MODE PIN NO.	REC	PLAY
FW7105		
1	0	0
2	0	0

<2D DIGITAL>

MODE PIN NO.	REC	PLAY
IC1201	-	-
CN1201		
1	3.7	3.7
2	0	0
3	0.5	2.4
4	5.0	5.0
5	2.0	2.0
6	0.1	4.9
7	3.3	3.3
8	0	0
9	2.8	2.8
10	0	0
11	3.3	3.3
12	3.8	3.8
13	0	0
14	0	0
15	2.4	2.4
16	0	0
17	0	0

<DEMODULATOR>

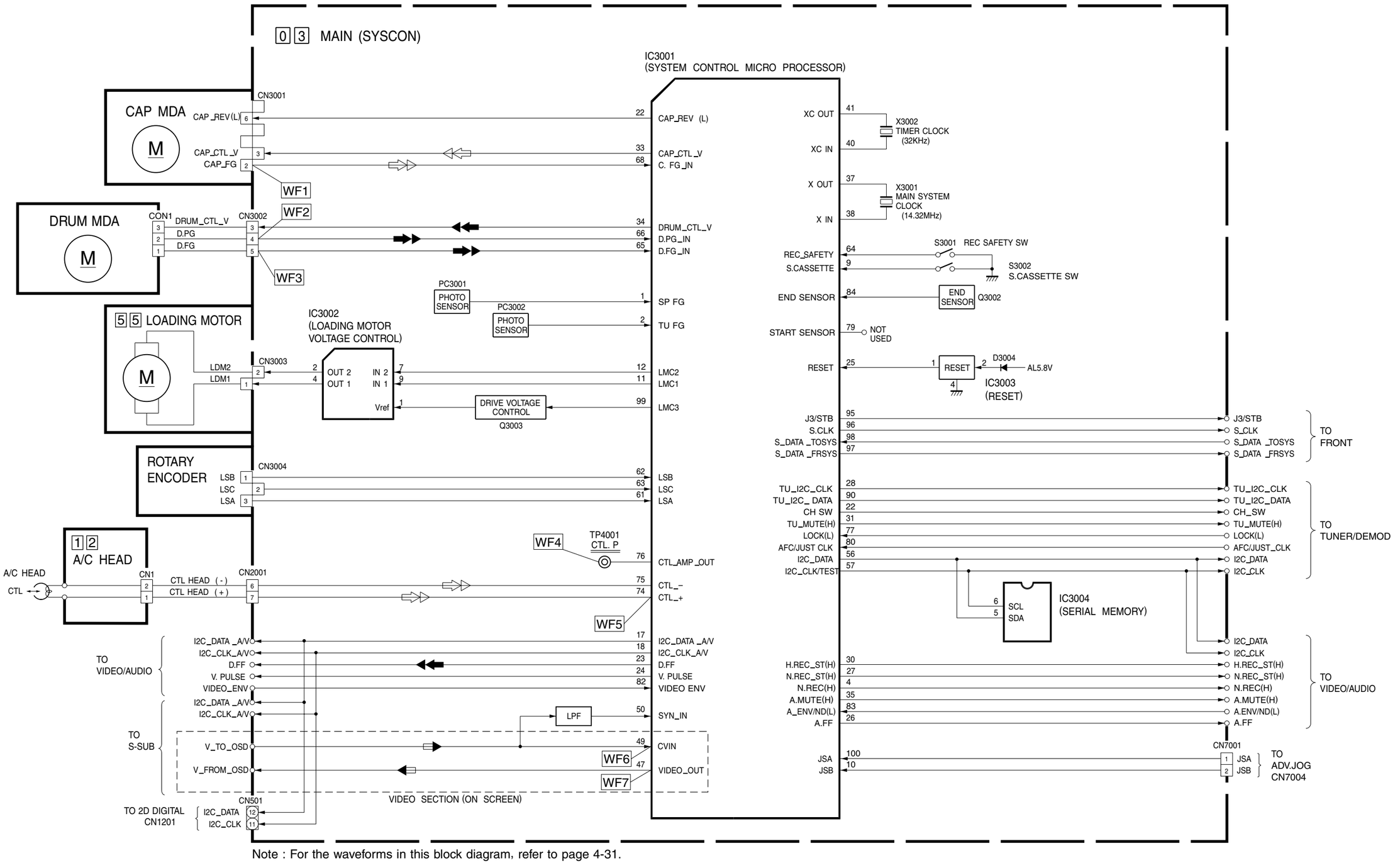
MODE PIN NO.	REC	PLAY
IC1501	-	-
CN1501		
1	0	0
2	4.5	4.5
3	4.5	4.5
4	4.8	4.8

4.18 CPU PIN FUNCTION

<SYSCON IC3001>

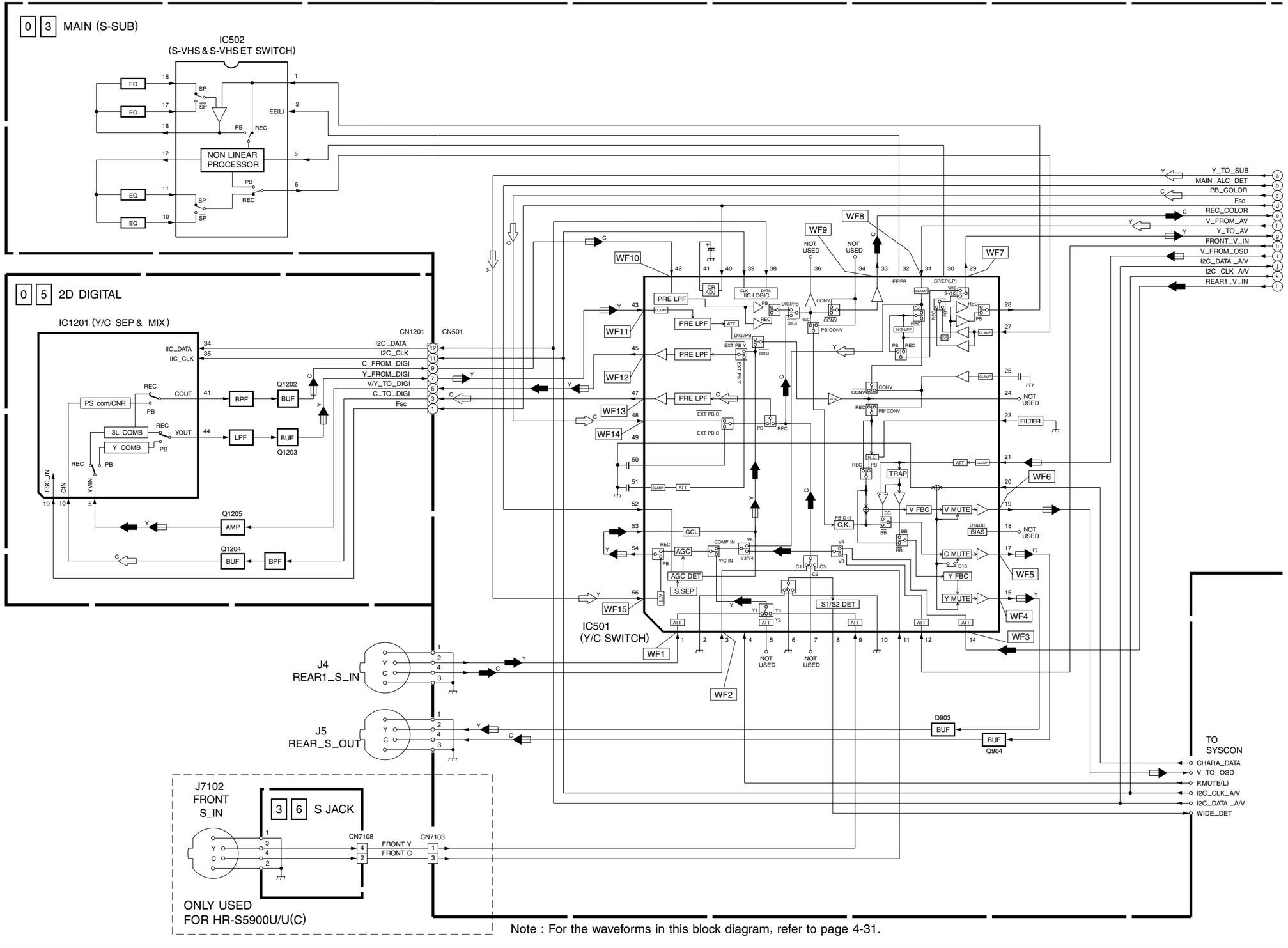
PIN No.	LABEL	IN/OUT	FUNCTION
1	SP FG	IN	DETECTION SIGNAL FOR SUPPLY REEL ROTATION/TAPE REMAIN
2	TU FG	IN	DETECTION SIGNAL FOR TAKE-UP REEL ROTATION/TAPE REMAIN
3	R.PAUSE IN/AV COMPULINK IN	IN	REMOTE PAUSE INPUT/NC
4	N.REC(H)	OUT	NORMAL AUDIO REC MODE CONTROL (REC: H)
5	RC IN	IN	REMOTE CONTROL DATA INPUT
6	TRICK[H]/M_TRICK[L]	-	NC
7	ET_PB[H]/HS_FR	-	NC
8	FULL.E.ON[H]/SEP_PB[H]	OUT	FULL ERASE HEAD ON: H/NC
9	S.CASSETTE	IN	DETECTION SIGNAL FOR SVHS CASSETTE (SVHS: H)
10	JSB	IN	INPUT FOR THE JOG SHUTTLE
11	LMC1	OUT	LOADING MOTOR DRIVE (1)
12	LMC2	OUT	LOADING MOTOR DRIVE (2)
13	RMO/R-Y_REV/BS_ANT_ON[H]	OUT	REMOTE CONTROLLER OUTPUT FOR CABLE BOX/NC/NC
14	POWER DET	IN	DETECTION SIGNAL FOR POWER DOWN OF AC POWER SUPPLY
15	CONV_CTL(H)/GR_ON[H]	OUT	RF CONVERTER ON/OFF (ON: H, OFF: L) /NC
16	CTL GAIN	OUT	CONTROL AMP OUT FREQUENCY RESPONSE SWITCHING
17	I2C_DATA_A/V	IN/OUT	SERIAL I/O DATA
18	I2C_CLK_A/V	OUT	SERIAL DATA TRANSFER CLOCK
19	SP_SHORT(H)/FLY_REC_ST[H]	OUT	MODE SELECT [HR-S3900U/U(C)] / FLY REC START: H [HR-S5900U/U(C)
20	EP_SHORT(H)/FLY_REC(H)	OUT	MODE SELECT [HR-S3900U/U(C)] / REC TIMING CONTROL (FLY ERASE ON: H) [HR-S5900U/U(C)
21	SIDE BIND GAIN	OUT	VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE
22	CH SW	OUT	CHANNEL SWITCHING SIGNAL
23	D.FF	OUT	ROTATION DETECTION SIGNAL FOR DRUM MOTOR/TIMING CONTROL SIGNAL FOR REC
24	V.PULSE	OUT	V.PULSE ADDITION TIMING CONTROL
25	RESET	-	RESET TERMINAL (RESET ON: L)
26	A.FF	OUT	AUDIO FF OUTPUT
27	N.REC_ST(H)	OUT	NORMAL AUDIO SOUND RECORDING START
28	TU_I2C_CLK	OUT	SERIAL DATA TRANSFER CLOCK FOR TUNER
29	SLOW_PULSE	-	NC
30	H.REC_ST(H)	OUT	HiFi AUDIO SOUND RECORDING START
31	TU_MUTE(H)	OUT	TUNER AUDIO MUTE CONTROL (MUTE: H)
32	VP_CTL	-	NC
33	CAP_CTL_V	OUT	CAPSTAN MOTOR CONTROL
34	DRUM_CTL_V	OUT	DRUM MOTOR CONTROL
35	A.MUTE(H)	OUT	AUDIO MUTE CONTROL (MUTE ON: H)
36	VDD	-	SYSTEM POWER
37	X OUT	-	MAIN SYSTEM CLOCK (14.32MHz)
38	X IN	-	MAIN SYSTEM CLOCK (14.32MHz)
39	VSS	-	GND
40	XC IN	-	TIMER CLOCK (32.768kHz)
41	XC OUT	-	TIMER CLOCK (32.768kHz)
42	CLK SEL	IN	SELECT FOR BACKUP METHOD (LITHIUM OR E.CAPACITOR): H
43	P.MUTE(L)	OUT	PICTURE MUTE CONTROL (MUTE: L)
44	3.58NTSC[L]/P.SAVE[L]	-	NC / NC
45	V.REF/SYNC_DET[H]	-	NC / NC
46	PROTECT	IN	DETECTION SIGNAL FOR SWITCHING POWER SUPPLY
47	VIDEO_OUT	OUT	COMPOSITE VIDEO SIGNAL OUTPUT
48	VSS2	-	GND
49	CVIN	IN	COMPOSITE VIDEO SIGNAL INPUT
50	SYN_IN	IN	COMPOSITE SYNCHRONIZING SIGNAL FOR SERVO, VERTICAL SYNCHRONIZING SIGNAL FOR OSD
51	VDD2	-	SYSTEM POWER
52	AFCC	IN	FILTER INPUT FOR HORIZONTAL SYNCHRONIZING OF OSD CHARACTER
53	AFCLPF	OUT	FILTER OUTPUT FOR HORIZONTAL SYNCHRONIZING OF OSD CHARACTER
54	FSCI/BIT_IN(H)	-	NC
55	FSCLPF/BS_P.CTL	-	NC
56	I2C_DATA	IN/OUT	SERIAL I/O DATA
57	I2C_CLK/TEST	OUT	SERIAL DATA TRANSFER CLOCK / MECHANISM TEST SIGNAL
58	CHARAE	OUT	OSD CHARACTER DATA (FRINGE) OUTPUT
59	P.CTL[H]	OUT	CONTROL SIGNAL FOR SWITCHING POWER SUPPLY
60	CHARAM	OUT	OSD CHARACTER DATA OUTPUT
61	LSA	IN	MECHANISM MODE DETECT (A)
62	LSB	IN	MECHANISM MODE DETECT (B)
63	LSC	IN	MECHANISM MODE DETECT (C)
64	REC_SAFETY	IN	REC SAFETY SWITCH DETECT (SW ON: L)
65	D.FG_IN	IN	DRUM FG PULSE INPUT
66	D.PG_IN	IN	DRUM PICKUP PULSE INPUT (SWITCHING PULSE)
67	C.FG_AMP_OUT	OUT	SET-UP OUTPUT FOR CAPSTAN FG AMPLIFICATION FACTOR
68	C.FG_IN	IN	CAPSTAN FG PULSE INPUT
69	AMP_VREF_OUT	OUT	AMP CIRCUIT REFERENCE VOLTAGE OUTPUT
70	AMP_VREF_IN	IN	AMP CIRCUIT REFERENCE VOLTAGE INPUT
71	AVSS	-	GND
72	AMP_C	IN	CAPACITOR CONNECTION TERMINAL FOR CONTROL AMP CIRCUIT
73	AVCC	-	SYSTEM POWER
74	CTL_+	IN/OUT	CTL(+) SIGNAL
75	CTL_-	IN/OUT	CTL(-) SIGNAL
76	CTL_AMP_OUT	OUT	CTL PULSE OUTPUT
77	LOCK(L)	IN	TUNING PLL LOCK DETECT: L
78	AGC_CTL/BS_DEC[H]	-	NC
79	START SENSOR	-	NC
80	AFC/JUST CLK	IN	TUNING CHECK / NC
81	LED	IN	NC
82	VIDEO ENV	IN	AUTO TRACKING DETECT/INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL
83	A.ENV/IND[L]	IN	AUDIO PB FM ENV. INPUT / NON HiFi MODE: L
84	END SENSOR	IN	END SENSOR
85	KEY1/IND[L]	IN	OPERATION CONTROL SIGNAL / NC
86	KEY2/IND[R]	IN	OPERATION CONTROL SIGNAL / NC
87	KILLER_DET/BS_ANT/COMPU_OUT	OUT	NC / NC / A/V COMPULINK OUTPUT
88	NORM/S	IN	
89	WIDE_DET	IN	WIDE ASPECT DETECTION
90	TU_I2C_DATA	IN/OUT	SERIAL I/O DATA FOR TUNER
91	J4/BIL_SEL	-	NC / NC
92	J5/V.UP[H]	-	NC / NC
93	J6/V.UP2[H]	-	NC / NC
94	CAP_REV[L]	OUT	CAPSTAN MOTOR REVERSE CONTROL (FWD: H/REV: L)
95	J3/STB	OUT	NC / STROBE (FOR FDP DRIVER)
96	S.CLK	OUT	SERIAL DATA TRANSFER CLOCK FROM THE FDP DRIVER TO THE ON-SCREEN IC
97	S_DATA_FRSYS	OUT	SERIAL DATA TRANSFER OUTPUT FROM THE FDP DRIVER TO THE ON-SCREEN IC
98	S_DATA_TOSYS	IN	SERIAL DATA TRANSFER OUTPUT FROM THE ON-SCREEN IC TO THE FDP DRIVER
99	LMC3	OUT	LOADING MOTOR DRIVE (3)
100	JSA	IN	INPUT FOR THE JOG SHUTTLE

4.19 SYSTEM CONTROL BLOCK DIAGRAM

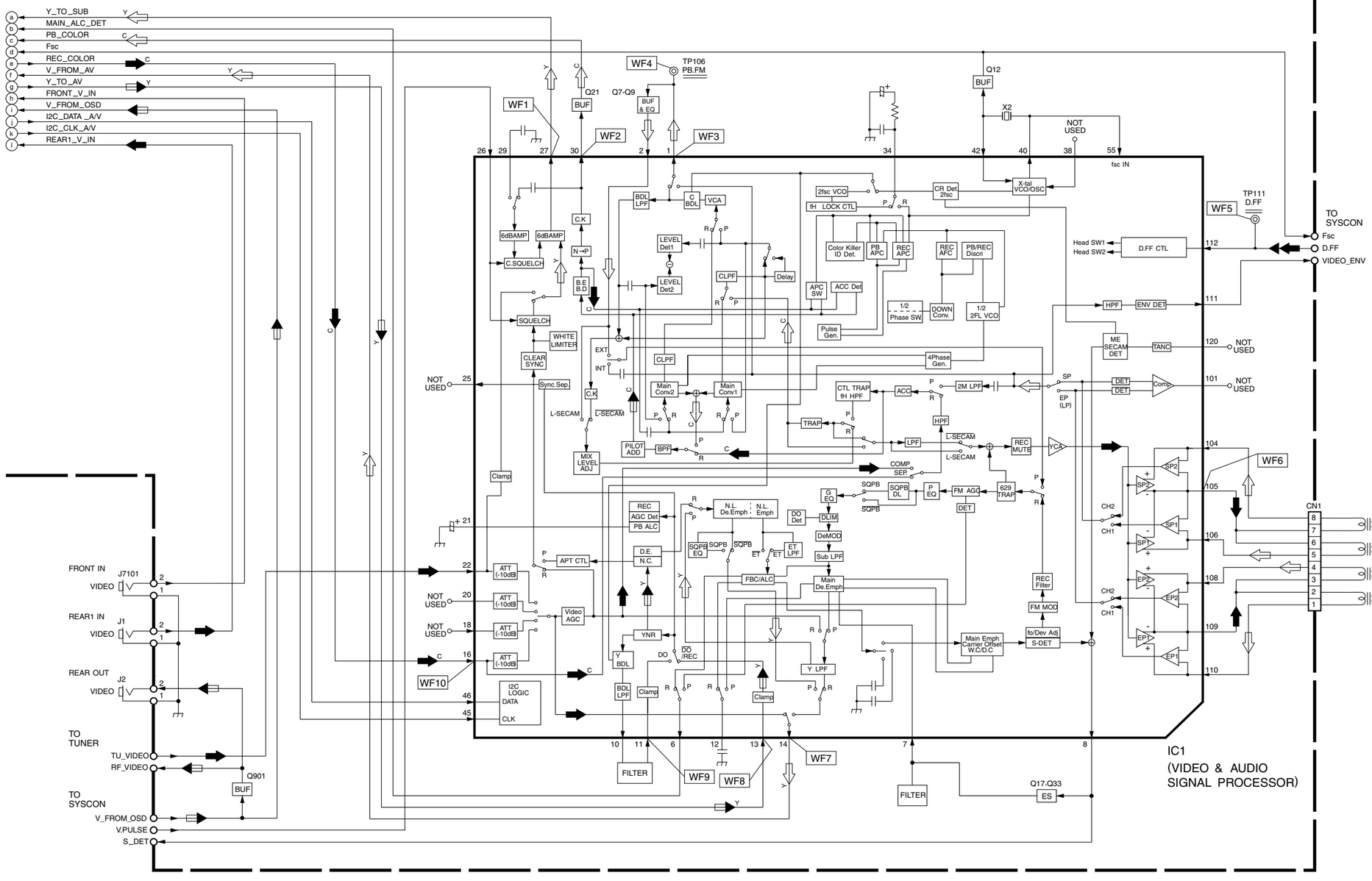


Note : For the waveforms in this block diagram, refer to page 4-31.

4.20 VIDEO BLOCK DIAGRAM

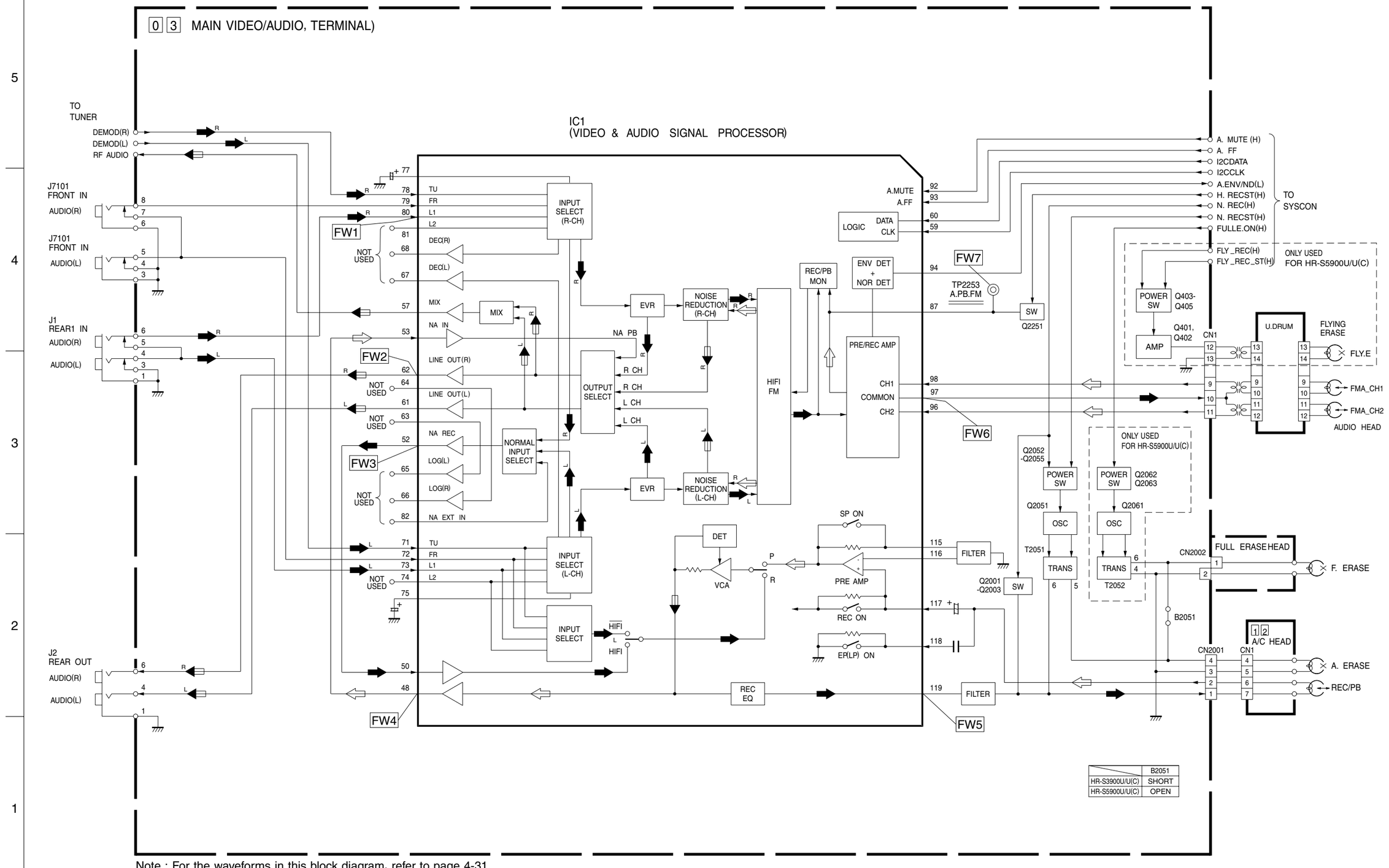


Note : For the waveforms in this block diagram, refer to page 4-31.



Note : For the waveforms in this block diagram, refer to page 4-31.

4.21 AUDIO BLOCK DIAGRAM



	B2051
HR-S3900U/U(C)	SHORT
HR-S5900U/U(C)	OPEN

Note : For the waveforms in this block diagram, refer to page 4-31.

E. & O. E. No. 82848
(Sanwa)-V14S1/S15

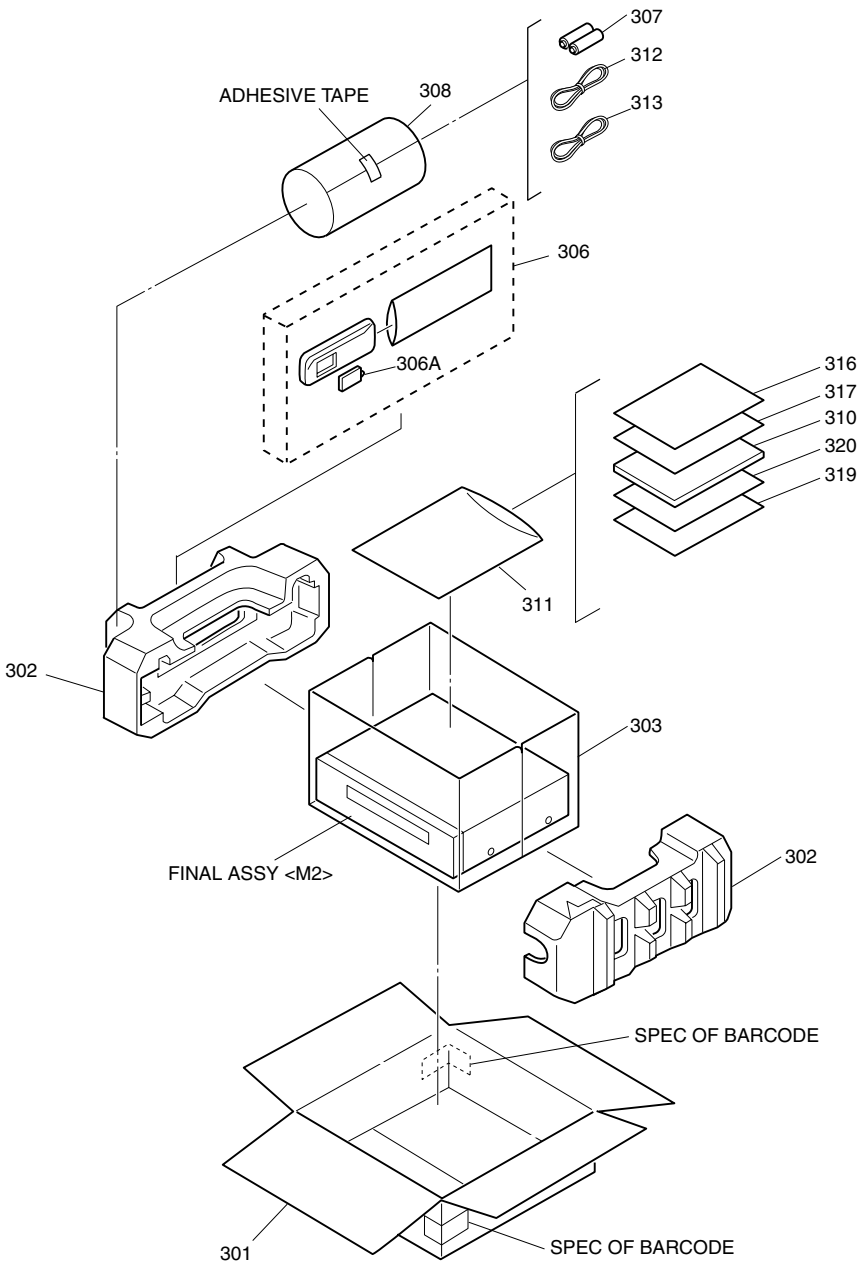
SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

The instruction manual to be provided with this product will differ according to the destination.



#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

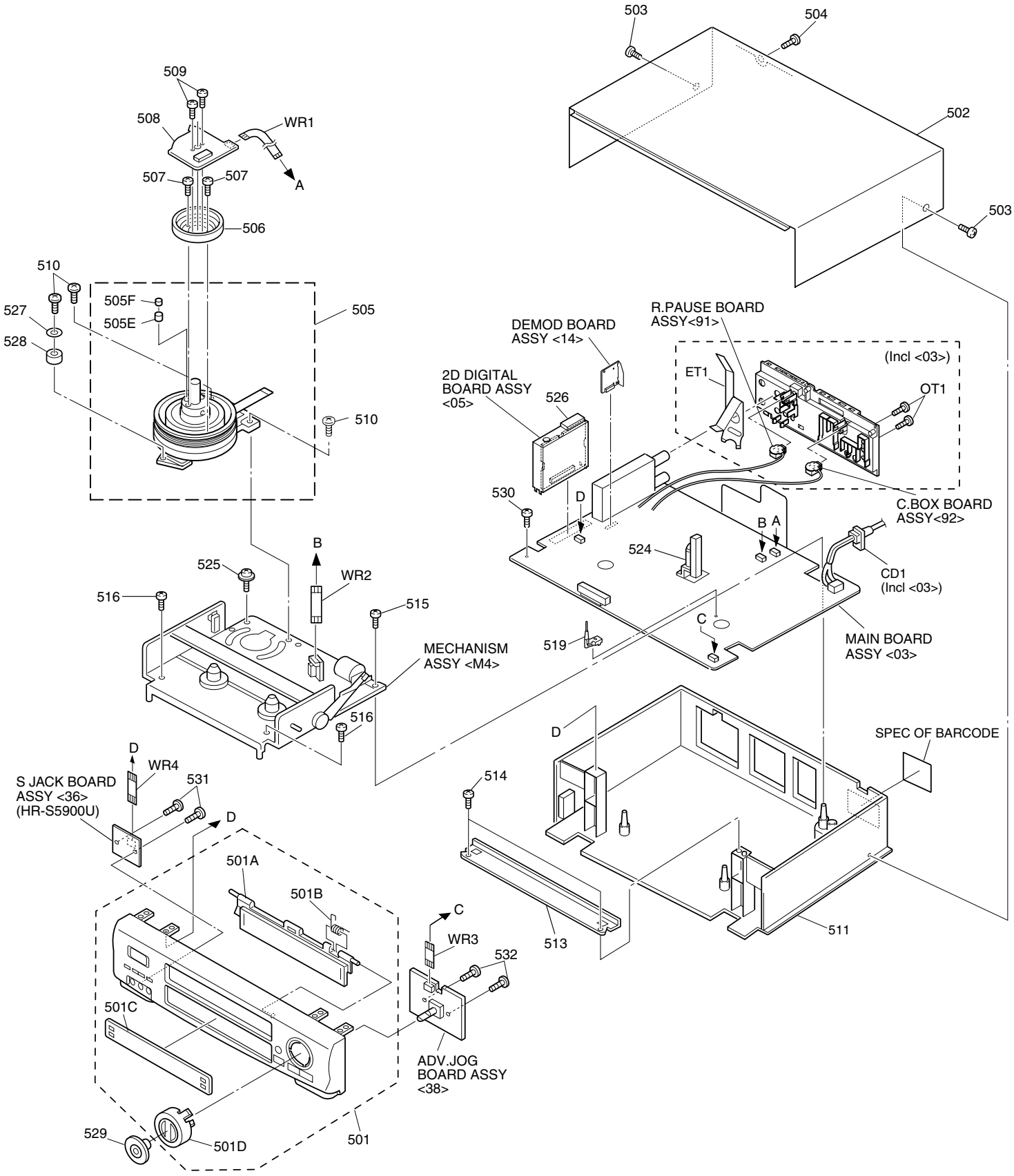
PACKING AND ACCESSORY ASSEMBLY <M1>

		REF No.	PART No.	PART NAME, DESCRIPTION
		301	LP30899-001B	PACKING CASE
		302	LP30718-001B	CUSHION ASSY
		303	PQM30021-93	POLY BAG
		306	LP20303-015A	REMOTE CONTROLLER
		306A	LP40225-002A	COVER(BATTERY)
		307	–	BATTERY,X2("AA" TYPE)
		308	QPC02202230P	POLY BAG
	⚠	310	LPT0503-001A	INST.BOOK(EN)
	⚠		LPT0503-002A	INST.BOOK(FR),S3900U(C)/S5900U(C)
		311	QPC02503530P	POLY BAG
		312	PEAC0294-04	RF CABLE
		313	QAM0004-002	S CABLE
		316	BT-52004-1	WARRANTY CARD,S3900U(C),S5900U(C)
		317	BT-51020-2	REGIST.CARD,S3900U/S5900U
		319	BT-20071B	SER.NET CARD,S3900U(C)/S5900U(C)
		320	LP30666-002B	SHEET(COUPON)

5.2 FINAL ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

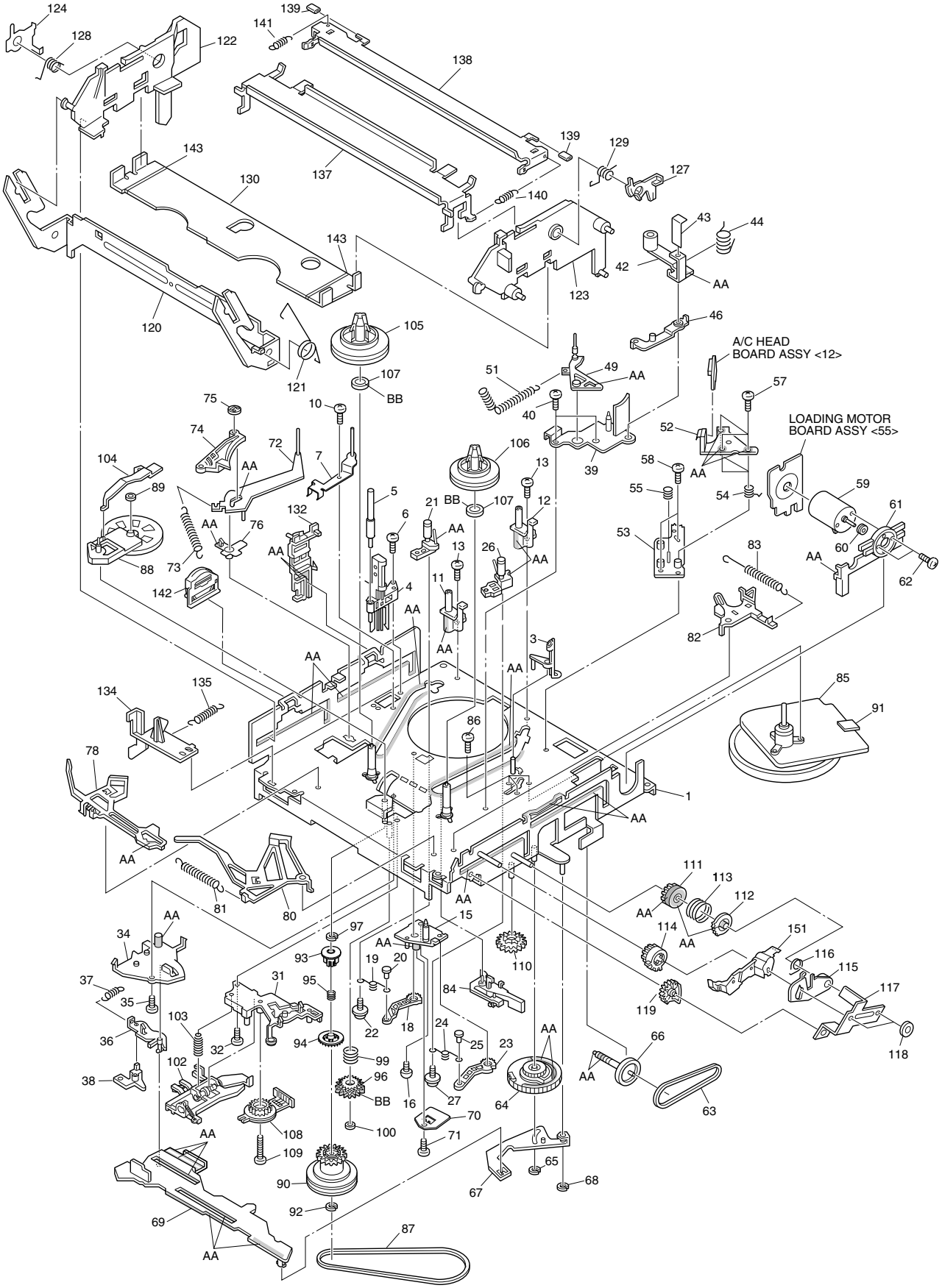
****

FINAL ASSEMBLY <M2>

	⚠	501	LP10289-062C	FRONT PANEL ASSY,S5900U/U(C)
	⚠		LP10289-063C	FRONT PANEL ASSY,S3900U/U(C)
		501A	LP20868-005A	CASSETTE DOOR,S5900U/U(C)
			LP20868-035A	CASSETTE DOOR,S3900U/U(C)
		501B	PQ46448	TORSION SPRING
		501C	LP20869-092A	DISPLAY WINDOW,S5900U/U(C)
			LP20869-093A	DISPLAY WINDOW,S3900U/U(C)
		501D	LP21014-001C	ORNAMENT
	⚠	502	LP10013-021D	TOP COVER
		503	QYTDSF3010M	SCREW,X2 TOP COVER(SIDE)
		504	QYTDSF3010M	SCREW,TOP COVER(REAR)
		505	LP20981-010A	DRUM SUB ASSY,S3900U/U(C)
			LP20981-012A	DRUM SUB ASSY,S5900U/U(C)
		505E	LP40323-001A	CONTACT
		505F	LP30004-014A	COMPRESSION SPRING
		506	PDZ0179-1-4	ROTOR ASSY
		507	QYSPSP3006Z	SCREW,X2
	⚠	508	QAR0169-002	STATOR ASSY
		509	QYSPSPH2606Z	SCREW,X2
		510	QYTDST2610Z	SCREW,X3 DRUM
	⚠	511	LP10108-012E	BOTTOM CHASSIS
		513	LP30312-001B	BRACKET(CHASSIS)
		514	QYTDSF3010Z	SCREW,X2
		515	QYTDSF4012Z	SCREW,MECHA
		516	QYTDSF3010Z	SCREW,X2 MECHA
		519	LP40407-001A	KNOB ASSY
		524	LP40253-001B	STOPPER
		525	PQ40413	SPECIAL SCREW,MECHA
		526	LP30002-088B	SPACER,SHIELD FRAME
		527	QYWWS267505Z	WASHER
		528	LP30017-021A	SPACER
		529	LP30954-001A	KNOB ASSY
		530	QYTDSF3010Z	SCREW,MAIN
		531	QYTDSF2608Z	SCREW,X2 S JACK
		532	QYTDSF2608Z	SCREW,X2 JOG
		WR1	QUQ212-0518CG	FFC WIRE,DRUM CN3002
		WR2	WJT0005-002A	E-CARD WIRE,A/C HEAD CN2001
		WR3	QUQ112-0914CG	FFC WIRE,FRONT CN7001
		WR4	WJT0026-001A	E-CARD WIRE,S(FSA) CN7103,S5900U/U(C)

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

5.3 MECHANISM ASSEMBLY <M4>



Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

MECHANISM ASSEMBLY <M4>

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
		1	LP20821-006A	MAIN DECK ASSY
		3	LP30492-002B	GUIDE POLE GUARD
		4	NAH0001-001	FULL ERASE HEAD
		5	LP40098-001B	GUIDE POLE(SUPPLY)
		6	QYTDST2608Z	SCREW,FE HEAD
		7	LP40637-002A	TENSION STUD BASE ASSY
		10	QYTDST2606Z	SCREW
		11	LP30409-002C	UV CATCHER 2
		12	LP30409-002C	UV CATCHER 2
		13	QYTPST2606Z	SCREW,X2
		15	LP30223-003C	LOADING ARM GEAR SHAFT
		16	QYTDST2606Z	SCREW
		18	LP30224-001B	LOADING ARM GEAR(SUPPLY)
		19	LP40099-001A	TORSION ARM
		20	LP40100-001A	PIN
		21	LP40101-006A	POLE BASE ASSY(SUPPLY)
		22	QYSPSTG2606Z	SCREW
		23	LP40103-002B	LOADING ARM GEAR(TAKE UP)
		24	LP40099-001A	TORSION ARM
		25	LP40100-001A	PIN
		26	LP40104-006A	POLE BASE ASSY(TAKE UP)
		27	QYSPSTG2606Z	SCREW
		31	LP20233-004B	ROTARY ENCODER GUIDE
		32	QYTPST2606Z	SCREW
		34	LP30226-004E	CONTROL PLATE GUIDE
		35	QYTPST2605Z	SCREW
		36	LP30249-003B	TAKE UP LEVER
		37	LP30003-006A	TENSION SPRING
		38	LP40119-002A	TAKE UP HEAD
		39	LP20234-004B	LID GUIDE
		40	QYTDST2606Z	SCREW,X2
		42	LP40105-003A	PINCH ROLLER ARM ASSY
		43	LP40753-001A	PINCH ROLLER SHEET3
		44	LP40148-002A	TORSION SPRING
		46	LP40149-001C	PRESS LEVER ASSY
		49	LP40106-007A	GUIDE ARM ASSY
		51	LP40134-002A	TENSION SPRING
		52	QAH0058-001	AC HEAD
		53	LP30228-001A	HEAD BASE
		54	LP30004-013A	COMPRESSION SPRING,X3
		55	LP40236-001A	COMPRESSION SPRING
		57	LP40213-002B	SPECIAL SCREW,X3
		58	QYTDST2608Z	SCREW,X2
		59	QAR0023-001	LOADING MOTOR
		60	PQ43546-1-2	MOTOR PULLEY
		61	LP30230-001B	MOTOR GUIDE
		62	QYTPSP3003Z	SCREW,X2
		63	LP30005-003A	BELT,LOADING MOTOR
		64	LP20791-002D	CONTROL CAM
		65	PQM30017-24	SLIT WASHER
		66	LP40120-001A	WORM GEAR
		67	LP40107-002A	LINK LEVER ASSY
		68	PQM30017-24	SLIT WASHER
		69	LP10201-003E	CONTROL PLATE
		70	LP40379-001B	CONTROL BRACKET(1)
		71	QYTDSF2608M	SCREW
		72	LP40108-002A	TENSION ARM ASSY
		73	LP30003-010A	TENSION SPRING
		74	LP40109-003D	TENSION BRAKE ASSY
		75	PQ46302-1-3	ADJUST PIN
		76	LP30232-002A	TENSION ARM BEARING
		78	LP40532-008B	MAIN BRAKE ASSY (SUPPLY)
		80	LP40111-011A	MAIN BRAKE ASSY (TAKE UP)
		81	LP30003-026A	TENSION SPRING
		82	LP40112-001F	SUB BRAKE ASSY(TAKE UP)
		83	LP40357-002A	TENSION SPRING
		84	LP40461-001A	CAPSTAN BRAKE ASSY
		85	QAR0087-005	CAPSTAN MOTOR
		86	QYTDSF2606M	SCREW,X3
		87	LP30005-007A	BELT,CAPSTAN MOTOR
		88	LP40114-012A	IDLER ARM ASSY
		89	LP40599-001A	WASHER
		90	LP40593-001A	CLUTCH UNIT 3
		91	LP30002-097A	SPACER,CAPSTAN MOTOR
		92	PQM30017-47	SLIT WASHER
		93	LP30696-002A	CLUTCH GEAR 4
		94	LP30697-003A	COUPLING GEAR
		95	LP40554-002A	COMPRESSION SPRING
		96	LP40442-001A	DIRECT GEAR
		97	LP30017-019A	SPACER
		99	LP40483-002A	COMPRESSION SPRING
		100	LP30016-001A	SLIT WASHER
		102	LP40484-001J	CHANGE LEVER ASSY
		103	LP40512-002B	COMPRESSION SPRING
		104	LP30236-002C	IDLER LEVER
		105	LP20237-001B	REEL DISK (SUPPLY)
		106	LP20238-001B	REEL DISK (TAKE UP)
		107	LP30017-015A	SPACER,X2
		108	QSW0554-003	ROTARY ENCODER
		109	QYTPST2620Z	SCREW
		110	LP30237-002B	CASSETTE GEAR
		111	LP30239-002G	LIMIT GEAR(1)
		112	LP30240-002G	LIMIT GEAR(2)
		113	LP40136-001E	TORSION SPRING
		114	LP30242-002A	RELAY GEAR
		115	LP30339-002E	OPENER GUIDE
		116	LP40545-001A	TORSION SPRING
		117	LP40214-001B	C.H.BRACKET
		118	PQM30017-47	SLIT WASHER,X2
		119	LP30243-001D	DRIVE GEAR
		120	LP20240-001G	DRIVE ARM
		121	LP40137-001A	TORSION SPRING
		122	LP10081-002L	SIDE HOLDER(L)
		123	LP10082-002M	SIDE HOLDER(R)
		124	LP30255-006A	LOCK LEVER(L)
		127	LP30256-001H	LOCK LEVER(R)
		128	LP40168-003A	TORSION SPRING(L)
		129	LP40218-001B	TORSION SPRING(R)
		130	LP30257-001G	CASSETTE HOLDER
		132	LP30244-002G	GUIDE RAIL
		134	LP30245-002F	REC SAFETY LEVER
		135	LP30003-004A	TENSION SPRING
		137	LP20578-001C	TOP GUIDE
		138	LP30500-001C	HOLD PLATE
		139	LP40450-003A	PAD,X2
		140	LP30003-025B	TENSION SPRING
		141	LP30003-024A	TENSION SPRING
		142	LP40481-003A	ROLLER CAM ASSY
		143	LP30019-014A	PAD,X2
		151	LP20324-003B	DOOR OPENER

5.4 ELECTRICAL PARTS LIST

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
**********				

MAIN BOARD ASSEMBLY <03>

		PW1	LPA10134-03D1	MAIN BOARD ASSY,S5900U/U(C)
			LPA10134-05D1	MAIN BOARD ASSY,S3900U/U(C)
		IC1	JCP8050-NSA	IC
			or JCP8050-MSA	IC
		IC501	JCP8038	IC
		IC502	VC2076DP	IC
		IC3001	MN101D02HWD	IC
		IC3002	BA6956AN	IC
		IC3003	IC-PST3440U-X	IC
		IC3004	S-24C04BFJ-X	IC
			or X24C04S	IC
			or 24LC04B/SN-X	IC
			or AT24C04N-10SC-X	IC
			or BR24C04F-W-X	IC
		IC5301	L5431	IC
			or MM1431AT	IC
		IC7001	PT6312LQ	IC
			or UPD16312GB/H/	IC
		IC7003	GP1U291Q	IR DETECT UNIT
			or PIC-28143LJ	IR DETECT UNIT
			or PIC-37143LJ	IR DETECT UNIT
			or PNA4652M00YC	IR DETECT UNIT
		Q1	2SC4081/S/-X	TRANSISTOR,S3900U/U(C)
		Q2	2SC4081/S/-X	TRANSISTOR,S3900U/U(C)
		Q3	2SC4081/S/-X	TRANSISTOR,S3900U/U(C)
		Q4	2SC4081/S/-X	TRANSISTOR,S3900U/U(C)
		Q7	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q8	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q9	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q12	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q17	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q21	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q33	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or UN521E	TRANSISTOR
			or RN1309	TRANSISTOR
		Q38	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q401	2SA1576A/QR/-X	TRANSISTOR,S5900U/U(C)
		Q402	2SA1576A/QR/-X	TRANSISTOR,S5900U/U(C)
		Q403	DTC144WU	TRANSISTOR,S5900U/U(C)
			or PDTC144WU	TRANSISTOR,S5900U/U(C)
			or RN1309	TRANSISTOR,S5900U/U(C)
			or UN521E	TRANSISTOR,S5900U/U(C)
		Q404	DTC144WU	TRANSISTOR,S5900U/U(C)
			or PDTC144WU	TRANSISTOR,S5900U/U(C)
			or RN1309	TRANSISTOR,S5900U/U(C)
			or UN521E	TRANSISTOR,S5900U/U(C)
		Q405	2SA1576A/QR/-X	TRANSISTOR,S5900U/U(C)
		Q901	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q903	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q904	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q2001	2SC4081/QRS/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q2002	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
		Q2003	DTA144WU	TRANSISTOR
			or PDTA144WU	TRANSISTOR
			or RN2309	TRANSISTOR
			or UN511E	TRANSISTOR
		Q2051	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
		Q2052	2SA1576A/QR/-X	TRANSISTOR
			or 2SB1218A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q2053	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q2054	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
			or 2SB1218A/QR/-X	TRANSISTOR
		Q2055	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q2061	2SC4081/QRS/-X	TRANSISTOR,S5900U/U(C)
			or 2PC4081/R/-X	TRANSISTOR,S5900U/U(C)
			or 2SD1819A/QRS/-X	TRANSISTOR,S5900U/U(C)
		Q2062	2SA1576A/QR/-X	TRANSISTOR,S5900U/U(C)
			or 2PA1576/R/-X	TRANSISTOR,S5900U/U(C)
			or 2SB1218A/QR/-X	TRANSISTOR,S5900U/U(C)
		Q2063	DTC144WU	TRANSISTOR,S5900U/U(C)
			or PDTC144WU	TRANSISTOR,S5900U/U(C)
			or RN1309	TRANSISTOR,S5900U/U(C)
			or UN521E	TRANSISTOR,S5900U/U(C)
		Q2251	DTA144WU	TRANSISTOR
			or PDTA144WU	TRANSISTOR
			or RN2309	TRANSISTOR
			or UN511E	TRANSISTOR
		Q3002	PTZ-NV16	PHOTO TRANSISTO
			or PTZ-NV16A	PHOTO TRANSISTO
		Q3005	UN521K	TRANSISTOR
			or DTC114WU	TRANSISTOR
		Q4001	UN5211	TRANSISTOR
			or DTC114EU	TRANSISTOR
			or RN1302	TRANSISTOR
			or PDTC114EU	TRANSISTOR
		Q4002	2SD1819A/QRS/-X	TRANSISTOR
			or 2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q5101	2SK2043-CB14	FE TRANSISTOR
			or 2SK2043	FE TRANSISTOR
			or 2SK2324-LT	POWER MOS FET

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
			or 2SK2324	POWER MOS FET	
		Q5102	2SD2144S/UV/-T	TRANSISTOR	
		Q5302	2SD2375/QP/	TRANSISTOR	
		Q5303	2SD1819A/RS/-X	TRANSISTOR	
			or 2SC4081/RS/-X	TRANSISTOR	
			or 2PC4081/R/-X	TRANSISTOR	
		Q5304	2SD2144S/UV/-T	TRANSISTOR	
		Q5305	DTA114EU	TRANSISTOR	
			or PDTA114EU	TRANSISTOR	
			or RN2302	TRANSISTOR	
			or UN5111	TRANSISTOR	
		Q5306	DTC114EU	TRANSISTOR	
			or PDTC114EU	TRANSISTOR	
			or UN5211	TRANSISTOR	
			or RN1302	TRANSISTOR	
		Q6030	2SB1218A/QR/-X	TRANSISTOR	
			or 2SA1576A/QR/-X	TRANSISTOR	
			or 2PA1576/R/-X	TRANSISTOR	
		Q6551	2SC1740S/QRS/-T	TRANSISTOR	
			or 2SC3199/YG/-T	TRANSISTOR	
			or KTC3199/YG/-T	TRANSISTOR	
		Q7201	2SA720/RS/-T	TRANSISTOR	
		D1	1SS133	DIODE	
			or 1SS270A	DIODE	
		D2	1SS133	DIODE	
			or 1SS270A	DIODE	
		D12	1SS270A	DIODE	
			or 1SS133	DIODE	
		D2202	MTZJ9.1B	ZENER DIODE	
		D3001	LNB2301L01VI	LE DIODE	
		D3002	1SS133	DIODE	
			or 1SS270A	DIODE	
		D3005	11ES2	DIODE	
		D3007	1SS355	DIODE	
		D3013	DA204U	DIODE	
		D5001	S1WB/A/60-4102	BRIDGE DIODE	
			or S1WB/A/60-X	BRIDGE DIODE	
			or S1WB(A)60F4072X	BRIDGE DIODE	
		D5101	AU01	FR DIODE	
			or ERA18-04-T2	FR DIODE	
			or 10ELS4	FR DIODE	
			or 1SR153-400-T2	FR DIODE	
		D5102	AU01	FR DIODE	
			or ERA18-04-T2	FR DIODE	
			or 1SR153-400-T2	FR DIODE	
			or 10ELS4	FR DIODE	
		D5103	1SS133	DIODE	
			or 1SS270A	DIODE	
		D5201	AU01Z	FR DIODE	
			or 10ELS2	FR DIODE	
		D5203	AU01Z	FR DIODE	
			or 10ELS2	FR DIODE	
		D5204	AU01Z	FR DIODE	
			or 10ELS2	FR DIODE	
		D5206	FMB-24	BARRIER DIODE	
			or FSQ05A04B	SB DIODE	
			or SB640FCT	SB DIODE	
			or YG801C04	SB DIODE	
			or SF5SC4	SB DIODE	
		D5210	AU01Z	FR DIODE	
			or ERA18-02-T2	FR DIODE	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
			or 10ELS2	FR DIODE	
			or 1SR153-400-T2	FR DIODE	
			or PG104RS	FR DIODE	
		D5211	AU01Z	FR DIODE	
			or ERA18-02-T2	FR DIODE	
			or PG104RS	FR DIODE	
			or 10ELS2	FR DIODE	
			or 1SR153-400-T2	FR DIODE	
		D5301	MTZJ15C	ZENER DIODE	
			or RD15ES/B3/-T2	ZENER DIODE	
		D5302	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		D5303	RD5.1JS/B2/-T2	ZENER DIODE	
			or MA4051N/M/-T2	ZENER DIODE	
		D5304	1SS355	DIODE	
		D5307	QUY153-050Y	IM BUS WIRE	
		D5309	MTZJ27C	ZENER DIODE	
			or RD27ES/B3/-T2	ZENER DIODE	
		D5310	1SS133	DIODE	
			or 1SS270A	DIODE	
		D6002	HZ30-2L-T2	ZENER DIODE	
			or HZ30-2LTD	Z DIODE (M)	
		D6551	MTZJ10B	ZENER DIODE	
		D7001	RD9.1ES/B2/-T2	ZENER DIODE	
			or UZ9.1BSB	ZENER DIODE	
			or MTZJ9.1B	ZENER DIODE	
		D7003	1SS133	DIODE	
			or 1SS270A	DIODE	
		D7004	1SS133	DIODE	
			or 1SS270A	DIODE	
		D7005	1SS133	DIODE	
			or 1SS270A	DIODE	
		D7006	1SS133	DIODE	
			or 1SS270A	DIODE	
		D7008	SLR-325MC-T	LE DIODE	
		D7009	SLR-325VC-T	LE DIODE	
		R1	NRVA02D-622X	CMF RESISTOR	6.2kΩ,1/10W
		R2	NRVA02D-152X	CMF RESISTOR	1.5kΩ,1/10W
		R3	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R6	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R8	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R9	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R12	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R21	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R22	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R25	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R26	NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W
		R27	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R28	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R29	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R30	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R31	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R32	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R33	NDC21HJ-7R0X	CAPACITOR	7pF,50V
		R34	NDC21HJ-270X	CAPACITOR	27pF,50V
		R36	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R39	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R42	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R44	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R45	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R46	NRSA02J-471X	MG RESISTOR	470Ω,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R48	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R68	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R77	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R90	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R92	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R93	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R104	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R118	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R120	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R201	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R202	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R401	NRSA02J-221X	MG RESISTOR,S5900U/U(C)	220Ω,1/10W
		R402	NRSA02J-102X	MG RESISTOR,S5900U/U(C)	1kΩ,1/10W
		R403	NRSA02J-391X	MG RESISTOR,S5900U/U(C)	390Ω,1/10W
		R404	NRSA02J-473X	MG RESISTOR,S5900U/U(C)	47kΩ,1/10W
		R405	NRSA02J-683X	MG RESISTOR,S5900U/U(C)	68kΩ,1/10W
		R407	NRSA02J-472X	MG RESISTOR,S5900U/U(C)	4.7kΩ,1/10W
		R408	NRSA02J-473X	MG RESISTOR,S5900U/U(C)	47kΩ,1/10W
		R503	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R504	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R505	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
		R506	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
		R507	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R508	NRSA02J-151X	MG RESISTOR	150Ω,1/10W
		R509	NRSA02J-162X	MG RESISTOR	1.6kΩ,1/10W
		R510	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W
		R511	NRVA02D-471X	CMF RESISTOR	470Ω,1/10W
		R512	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W
		R513	NRVA02D-152X	CMF RESISTOR	1.5kΩ,1/10W
		R514	NRVA02D-332X	CMF RESISTOR	3.3kΩ,1/10W
		R515	NRVA02D-332X	CMF RESISTOR	3.3kΩ,1/10W
		R901	NRSA02J-820X	MG RESISTOR	82Ω,1/10W
		R902	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R904	QRE123J-331X	RESISTOR	330Ω,1/2W
		R905	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R911	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R912	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R914	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R915	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R916	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R917	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R919	QRE123J-331X	RESISTOR	330Ω,1/2W
		R920	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R921	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R922	QRE123J-331X	RESISTOR	330Ω,1/2W
		R924	NRSA02J-750X	MG RESISTOR,S5900U/U(C)	75Ω,1/10W
		R925	NRSA02J-750X	MG RESISTOR,S5900U/U(C)	75Ω,1/10W
		R2001	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2003	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2004	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R2005	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R2006	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2007	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2009	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2010	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2013	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R2014	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R2015	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R2016	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2017	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R2018	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2019	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2053	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2054	NRSA02J-123X	MG RESISTOR,S3900U/U(C)	12kΩ,1/10W
			NRSA02J-153X	MG RESISTOR,S5900U/U(C)	15kΩ,1/10W
		R2055	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
		R2056	QRE141J-820Y	RESISTOR,S3900U/U(C)	82Ω,1/4W
			QRE141J-101Y	RESISTOR,S5900U/U(C)	100Ω,1/4W
		R2057	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2058	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2059	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2060	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2061	NRSA02J-273X	MG RESISTOR,S5900U/U(C)	27kΩ,1/10W
		R2062	NRSA02J-3R3X	MG RESISTOR,S5900U/U(C)	3.3Ω,1/10W
		R2063	NRSA02J-151X	MG RESISTOR,S5900U/U(C)	150Ω,1/10W
		R2064	NRSA02J-473X	MG RESISTOR,S5900U/U(C)	47kΩ,1/10W
		R2065	NRSA02J-183X	MG RESISTOR,S5900U/U(C)	18kΩ,1/10W
		R2201	NRSA02J-680X	MG RESISTOR	68Ω,1/10W
		R2204	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R2205	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R2206	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2207	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R2217	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R2218	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2219	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2223	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2224	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2232	NRSA02J-680X	MG RESISTOR	68Ω,1/10W
		R2251	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R3003	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3005	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3008	QUY160-100Y	IM BUS WIRE,S5900U/U(C)	
		R3013	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3017	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3018	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3021	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3022	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3028	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3035	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3043	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3058	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3060	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3078	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3088	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3090	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3094	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3095	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3096	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3097	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3098	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3099	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3201	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R3206	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3207	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3208	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3209	QRE141J-181Y	RESISTOR	180Ω,1/4W
		R3211	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R3212	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R3213	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R3214	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R3215	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R3216	QRE141J-474Y	RESISTOR	470kΩ,1/4W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R3217	NRSA02J-334X	MG RESISTOR	330kΩ,1/10W
		R3218	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3219	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R3220	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3221	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R3222	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3223	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
		R3224	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R3226	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3227	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3236	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3237	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3238	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3240	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3241	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3242	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3243	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R3244	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4001	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R4002	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R4003	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R4006	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
		R4010	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R4011	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R4012	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R4018	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4019	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4020	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4021	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4024	QRE141J-103Y	RESISTOR	10kΩ,1/4W
	⚠	R5001	QRZ9046-475Z	RESISTOR	4.7MΩ,1/2W
		R5101	QRE141J-224Y	RESISTOR	220kΩ,1/4W
		R5102	QRE141J-224Y	RESISTOR	220kΩ,1/4W
		R5103	QRE141J-683Y	RESISTOR	68kΩ,1/4W
		R5104	QRG02GJ-683	OMF RESISTOR	68kΩ,2W
		R5106	QRT01DJ-R39X	MF RESISTOR	0.39Ω,1W
		R5107	QRE121J-331Y	RESISTOR	330Ω,1/2W
		R5108	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R5109	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R5110	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R5301	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R5302	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R5303	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R5304	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R5305	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R5306	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R5308	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R5309	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R5310	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R5311	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R5312	NRVA02D-332X	CMF RESISTOR	3.3kΩ,1/10W
		R5313	NRVA02D-362X	CMF RESISTOR	3.6kΩ,1/10W
		R5314	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R5316	NRVA02D-822X	CMF RESISTOR	8.2kΩ,1/10W
	⚠	R5318	QRZ9005-221X	FUSI RESISTOR	220Ω,1/4W
		R5326	QUY153-050Y	IM BUS WIRE	
		R5332	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
		R6020	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6021	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6030	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R6031	NRSA02J-101X	MG RESISTOR	100Ω,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R6032	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R6050	QRE141J-330Y	RESISTOR	33Ω,1/4W
		R6051	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R6508	QUY153-050Y	IM BUS WIRE	
		R6510	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R6551	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
		R6552	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7001	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7002	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7003	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7004	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7005	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R7006	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7007	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7008	NRSA02J-563X	MG RESISTOR	56kΩ,1/10W
		R7009	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7010	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R7011	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R7012	QRE141J-333Y	RESISTOR	33kΩ,1/4W
		R7013	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R7014	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R7015	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R7016	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7017	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R7018	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R7022	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R7026	QUY160-100Y	IM BUS WIRE	
		R7035	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R7202	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7203	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R7204	QRE123J-100X	RESISTOR	10Ω,1/2W
		B3	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B6	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B8	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B11	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B33	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B43	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B2051	QUY153-050Y	IM BUS WIRE,S3900U/U(C)	
		B3001	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B5301	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B5303	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B5304	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B5308	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B6020	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B6550	QUY160-080Y	IM BUS WIRE	
		B6551	QUY160-080Y	IM BUS WIRE	
		B7002	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B7003	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B7004	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B7005	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B7006	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B7007	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B7013	QUY160-060Y	IM BUS WIRE	
		B7020	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B7022	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C1	NCB21HK-103X	CAPACITOR,S3900U/U(C)	0.01μF,50V
			NCF21CZ-105X	CAPACITOR,S5900U/U(C)	1μF,16V
		C2	NCB21HK-103X	CAPACITOR,S3900U/U(C)	0.01μF,50V
			NCF21CZ-105X	CAPACITOR,S5900U/U(C)	1μF,16V
		C3	NCB21HK-103X	CAPACITOR,S3900U/U(C)	0.01μF,50V
			NCF21CZ-105X	CAPACITOR,S5900U/U(C)	1μF,16V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C4	NCB21HK-103X	CAPACITOR,S3900U/U(C)	0.01µF,50V
			NCF21CZ-105X	CAPACITOR,S5900U/U(C)	1µF,16V
		C5	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C7	NDC21HJ-151X	CAPACITOR	150pF,50V
		C8	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C9	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C10	NDC21HG-151X	CAPACITOR	150pF,50V
		C11	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C12	NDC21HJ-7R0X	CAPACITOR	7pF,50V
		C14	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C15	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C16	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C17	QEKJ1HM-335	E CAPACITOR	3.3µF,50V
		C19	QEKJ0JM-336	E CAPACITOR	33µF,6.3V
		C20	QEKJ1HM-105	E CAPACITOR	1µF,50V
		C21	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C22	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C23	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C24	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C25	NDC21HJ-4R0X	CAPACITOR	4pF,50V
		C26	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C27	NCB21HK-223X	CAPACITOR	0.022µF,50V
		C28	QEKJ1HM-335	E CAPACITOR	3.3µF,50V
		C29	NCB21HK-472X	CAPACITOR	0.0047µF,50V
		C30	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C31	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C32	QCBB1HK-103	CAPACITOR	0.01µF,50V
		C33	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
		C34	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C35	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C36	QEKJ1HM-475	E CAPACITOR	4.7µF,50V
		C37	QEKJ1HM-105	E CAPACITOR	1µF,50V
		C38	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C39	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C40	QEKJ1EM-106	E CAPACITOR	10µF,25V
		C54	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C57	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C59	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C60	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C61	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C63	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C64	NDC21HJ-120X	CAPACITOR	12pF,50V
		C69	NCB21HK-103X	CAPACITOR,S3900U/U(C)	0.01µF,50V
		C70	NCB21HK-103X	CAPACITOR,S3900U/U(C)	0.01µF,50V
		C71	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C72	NDC21HJ-470X	CAPACITOR	47pF,50V
		C73	NDC21HJ-120X	CAPACITOR	12pF,50V
		C74	NDC21HJ-120X	CAPACITOR	12pF,50V
		C80	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C84	NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W
		C106	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C110	NCB21HK-331X	CAPACITOR	330pF,50V
		C137	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C201	QEKJ0JM-107	E CAPACITOR	100µF,6.3V
		C202	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C203	QEKJ1HM-105	E CAPACITOR	1µF,50V
		C205	NDC21HJ-101X	CAPACITOR	100pF,50V
		C207	NCF21CZ-105X	CAPACITOR	1µF,16V
		C220	NDC21HJ-101X	CAPACITOR	100pF,50V
		C401	NCB21HK-103X	CAPACITOR,S5900U/U(C)	0.01µF,50V
		C402	NCB21HK-223X	CAPACITOR,S5900U/U(C)	0.022µF,50V
		C403	NDC21HJ-151X	CAPACITOR,S5900U/U(C)	150pF,50V
		C404	NDC21HJ-470X	CAPACITOR,S5900U/U(C)	47pF,50V
		C406	NCB21HK-681X	CAPACITOR,S5900U/U(C)	680pF,50V
		C407	NDC21HJ-180X	CAPACITOR,S5900U/U(C)	18pF,50V
		C501	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
		C502	QEKJ1HM-104	E CAPACITOR	0.1µF,50V
		C503	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
		C504	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C505	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C506	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C507	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C508	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C509	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C510	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C511	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C512	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C513	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C514	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C515	QCBB1HK-103	CAPACITOR	0.01µF,50V
		C516	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C517	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C518	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C519	QERF1HM-225	E CAPACITOR	2.2µF,50V
		C520	QERF1EM-475	E CAPACITOR	4.7µF,25V
		C521	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C522	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
		C523	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
		C524	NDC21HG-301X	CAPACITOR	300pF,50V
		C525	NDC21HG-301X	CAPACITOR	300pF,50V
		C526	NDC21HJ-101X	CAPACITOR	100pF,50V
		C527	NDC21HJ-181X	CAPACITOR	180pF,50V
		C528	NDC21HG-271X	CAPACITOR	270pF,50V
		C529	NDC21HG-820X	CAPACITOR	82pF,50V
		C530	NDC21HG-221X	CAPACITOR	220pF,50V
		C531	NDC21HG-301X	CAPACITOR	300pF,50V
		C532	NDC21HG-301X	CAPACITOR	300pF,50V
		C533	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C534	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C535	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C551	QERF1HM-105	E CAPACITOR	1µF,50V
		C552	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C553	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C555	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C557	QERF1HM-105	E CAPACITOR,S5900U/U(C)	1µF,50V
		C558	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C559	NCB21HK-103X	CAPACITOR,S5900U/U(C)	0.01µF,50V
		C560	QERF1HM-105	E CAPACITOR	1µF,50V
		C561	QERF1HM-105	E CAPACITOR	1µF,50V
		C563	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C567	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C901	QETN0JM-477	E CAPACITOR	470µF,6.3V
		C904	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C911	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C912	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C913	QETN0JM-477	E CAPACITOR	470µF,6.3V
		C914	NRSA02J-0R0X	MG RESISTOR,S5900U/U(C)	0Ω,1/10W
		C2001	QEKJ1HM-475	E CAPACITOR	4.7µF,50V
		C2002	QEKJ1EM-106	E CAPACITOR	10µF,25V
		C2003	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C2005	QEKJ1HM-475	E CAPACITOR	4.7µF,50V
		C2006	NCB21HK-123X	CAPACITOR	0.012µF,50V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C2007	QEKJ1CM-226	E CAPACITOR	22µF,16V
		C2008	QEKJ1HM-475	E CAPACITOR	4.7µF,50V
		C2009	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C2010	NCB21HK-222X	CAPACITOR	0.0022µF,50V
		C2011	QEKJ1HM-475	E CAPACITOR	4.7µF,50V
		C2012	QEKJ1HM-475	E CAPACITOR	4.7µF,50V
		C2051	NCB21HK-331X	CAPACITOR	330pF,50V
		C2052	QFLC1HJ-823Z	F CAPACITOR,S3900U/U(C)	0.082µF,50V
			QFLC1HJ-333Z	F CAPACITOR,S5900U/U(C)	0.033µF,50V
		C2053	NCB21HK-332X	CAPACITOR,S5900U/U(C)	0.0033µF,50V
			NCB21HK-472X	CAPACITOR,S3900U/U(C)	0.0047µF,50V
		C2054	NCB21EK-223X	CAPACITOR,S3900U/U(C)	0.022µF,25V
			NCB21HK-103X	CAPACITOR,S5900U/U(C)	0.01µF,50V
		C2055	QEKJ1EM-106	E CAPACITOR	10µF,25V
		C2061	QFLC1HJ-333Z	F CAPACITOR,S5900U/U(C)	0.033µF,50V
		C2062	NCB21HK-332X	CAPACITOR,S5900U/U(C)	0.0033µF,50V
		C2063	NCB21HK-103X	CAPACITOR,S5900U/U(C)	0.01µF,50V
		C2064	QEKJ1EM-106	E CAPACITOR,S5900U/U(C)	10µF,25V
		C2201	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C2202	NCB21EK-333X	CAPACITOR	0.033µF,25V
		C2203	QEKJ1EM-106	E CAPACITOR	10µF,25V
		C2204	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C2205	QEKJ1HM-105	E CAPACITOR	1µF,50V
		C2206	QEKJ1EM-106	E CAPACITOR	10µF,25V
		C2207	QEKJ1CM-476	E CAPACITOR	47µF,16V
		C2208	QEKJ1HM-475	E CAPACITOR	4.7µF,50V
		C2209	QEKJ1HM-104	E CAPACITOR	0.1µF,50V
		C2210	QEKJ1HM-104	E CAPACITOR	0.1µF,50V
		C2215	QEKJ1HM-475	E CAPACITOR	4.7µF,50V
		C2217	QEKJ1EM-106	E CAPACITOR	10µF,25V
		C2219	QEKJ1EM-106	E CAPACITOR	10µF,25V
		C2220	QEKJ1HM-475	E CAPACITOR	4.7µF,50V
		C2221	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2222	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2223	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2224	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2225	QEKJ1HM-475	E CAPACITOR	4.7µF,50V
		C2226	QEKJ1EM-106	E CAPACITOR	10µF,25V
		C2227	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C2251	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C2252	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2253	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2254	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3001	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3003	QEKJ1EM-106	E CAPACITOR	10µF,25V
		C3008	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C3013	QEKJ1EM-106	E CAPACITOR	10µF,25V
		C3016	NDC21HJ-180X	CAPACITOR	18pF,50V
		C3017	NDC21HJ-270X	CAPACITOR	27pF,50V
		C3019	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C3022	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3023	NCF21CZ-105X	CAPACITOR	1µF,16V
		C3035	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3036	QERF0JM-107	E CAPACITOR	100µF,6.3V
		C3048	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C4001	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C4002	QERF1HM-105	E CAPACITOR	1µF,50V
		C4004	QERF1AM-336	E CAPACITOR	33µF,10V
		C4006	NCB21EK-563X	CAPACITOR	0.056µF,25V
		C4007	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C4009	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C4010	QERF0JM-476	E CAPACITOR	47µF,6.3V
		C4011	NCB21CK-224X	CAPACITOR	0.22µF,16V
		C4014	NDC21HJ-101X	CAPACITOR	100pF,50V
		C4015	NDC21HJ-101X	CAPACITOR	100pF,50V
		C4019	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C4022	NDC21HJ-101X	CAPACITOR	100pF,50V
	⚠	C5001	QFZ9073-683	F CAPACITOR	0.068µF,250V
	⚠	C5004	QCZ9094-472	CAPACITOR	0.0047µF,125V
		C5006	QETM2DM-157	E CAPACITOR	150µF,200V
		C5101	QCZ0212-472	CAPACITOR	0.0047µF,1kV
		C5102	QCZ0339-101Z	CAPACITOR	100pF,1kV
		C5104	QEKJ1HM-105	E CAPACITOR	1µF,50V
		C5105	QFN31HJ-183	F CAPACITOR	0.018µF,50V
		C5107	QFV91HJ-104	F CAPACITOR	0.1µF,50V
		C5201	QEMU0JM-227	E CAPACITOR	220µF,6.3V
		C5202	QETN1CM-108	E CAPACITOR	1000µF,16V
		C5203	QEMT1AM-128	E CAPACITOR	1200µF,10V
		C5204	QETJ2AM-475	E CAPACITOR	4.7µF,100V
		C5205	QETN1HM-106	E CAPACITOR	10µF,50V
		C5206	QETN1AM-476	E CAPACITOR	47µF,10V
		C5207	QETN1CM-107	E CAPACITOR	100µF,16V
		C5301	QEKJ1CM-107	E CAPACITOR	100µF,16V
		C5302	QEKJ1HM-106	E CAPACITOR	10µF,50V
		C5303	QEKJ1CM-107	E CAPACITOR	100µF,16V
		C5304	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C5305	QFV91HJ-154	F CAPACITOR	0.15µF,50V
		C5311	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C6029	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C7001	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C7002	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C7003	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C7005	NDC21HJ-470X	CAPACITOR	47pF,50V
		C7006	NDC21HJ-330X	CAPACITOR	33pF,50V
		C7007	QEKJ1HM-106	E CAPACITOR	10µF,50V
		C7008	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C7011	QCFB1HZ-104	CAPACITOR	0.1µF,50V
		C7015	QCFB1HZ-104	CAPACITOR	0.1µF,50V
		C7206	QEKJ0JM-227	E CAPACITOR	220µF,6.3V
		L1	QQL29BJ-100Z	COIL	10µH
		L2	QQL29BJ-101Z	COIL	100µH
		L3	QQL29BJ-100Z	COIL	10µH
		L4	QQL29BJ-100Z	COIL	10µH
		L5	QQL29BJ-100Z	COIL	10µH
		L11	QQL01BJ-120Z	COIL	12µH
		L13	QQL231J-101Y	COIL	100µH
		L15	QQL29BJ-100Z	COIL	10µH
		L18	QUY153-050Y	IM BUS WIRE	
		L19	QQL29BJ-100Z	COIL	10µH
		L20	QQL231J-101Y	COIL	100µH
		L28	QQL231J-150Y	COIL	15µH
		L201	QUY153-050Y	IM BUS WIRE	
		L203	QQL231J-3R3Y	COIL	3.3µH
		L401	QQL231J-150Y	COIL,S5900U/U(C)	15µH
		L402	QUY153-050Y	IM BUS WIRE,S5900U/U(C)	
		L501	QQL29BJ-100Z	COIL	10µH
		L503	QQL29BJ-100Z	COIL	10µH
		L504	QQL29BJ-100Z	COIL	10µH
		L901	QQL29BJ-101Z	COIL	100µH
		L2001	QUY153-050Y	IM BUS WIRE	
		L2251	QQL29BJ-100Z	COIL	10µH
		L4001	QUY153-050Y	IM BUS WIRE	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		L5201	PELN1184	COIL	33µH
		L5202	PU60944-330K	COIL	33µH
		L5301	QQL01BJ-101Z	COIL	100µH
		L6001	QQL29BK-1R0Z	COIL	1µH
		L6003	QQL29BK-1R0Z	COIL	1µH
		L6004	QQL071J-1R0Y	COIL	1µH
		L6032	QUY153-050Y	IM BUS WIRE	
		L6050	QUY153-050Y	IM BUS WIRE	
		L7201	QQL29BJ-101Z	COIL	100µH
		X2	QAX0575-001	CRYSTAL RESONATOR	
		X3001	QAX0526-001	CRYSTAL RESONATOR	
		S3001	QSW0602-004	PUSH SWITCH,REC SAFETY	
		S3002	QSW0695-001	PUSH SWITCH,S CASS	
		S7001	QSW0456-002Z	TACT SWITCH,POWER	
		S7002	QSW0456-002Z	TACT SWITCH,REC LINK	
		S7004	QSW0456-002Z	TACT SWITCH,SP/EP,S3900U/U(C)	
			QSW0456-002Z	TACT SWITCH,INSERT,S5900U/U(C)	
		S7006	QSW0456-002Z	TACT SWITCH,DISPLAY,S3900U/U(C)	
			QSW0456-002Z	TACT SWITCH,A.DUB,S5900U/U(C)	
		S7008	QSW0456-002Z	TACT SWITCH,PLAY	
		S7010	QSW0456-002Z	TACT SWITCH,E.PROG	
		S7011	QSW0456-002Z	TACT SWITCH,REC	
		S7013	QSW0456-002Z	TACT SWITCH,PAUSE	
		S7015	QSW0456-002Z	TACT SWITCH,STOP/EJECT	
		S7016	QSW0456-002Z	TACT SWITCH,SVHS ET	
		K2251	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		K2252	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		K2253	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		K5101	QQR0678-001Z	FERRITE BEAD	
		K5102	QQR0678-001Z	FERRITE BEAD	
		PC3001	GP3S123	IC(PHOTO SENSOR	
		PC3002	GP3S123	IC(PHOTO SENSOR	
	⚠	PC5101	PS2501-1	PH COUPLER	
		T2051	PELN0832	OSC TRANSFORMER,S3900U/U(C)	
			PELN0860	OSC TRANSFORMER,S5900U/U(C)	
		T2052	PELN0861	OSC TRANSFORMER,S5900U/U(C)	
	⚠	T5001	QQS0031-002	SW TRANSFORMER	
		ET1	LP30859-001A	EARTH PLATE	
		HD1	PQ35479-1-4	HOLDER(FDP),DI7001	
		HS1	LP40090-001A	HEAT SINK,Q5101	
	⚠	CD1	QMPD340-165-K	POWER CORD	
		SD1	LP30864-001A	SHIELD CASE(PRE)	
		DI7001	QLF0031-001	FL TUBE	
		TU6001	QAU0207-001	TUNER	
		OT1	QYTDSF3010M	SCREW,X2	
		OT2	QYTDST3006Z	SCREW,Q5101	
		J1	QNN0380-002	PIN JACK,REAR1 IN	
		J2	QNN0286-002	PIN JACK,REAR OUT	
		J4	QND0076-001	S JACK,REAR S IN	
		J5	QND0076-001	S JACK,S_OUT	
	⚠	TB1	LP20887-009A	TERMINAL BOARD	
		FC5001	QNG0006-001Z	FUSE CLIP,F5001	
		FC5002	QNG0006-001Z	FUSE CLIP,F5001	
		FW3001	QUM022-13A4A4	PARA RIBON WIRE	
		FW3002	QUM022-30A4A4	PARA RIBON WIRE	
		J7101	QNN0381-001	PIN JACK,FRONT IN	
	⚠	LF5002	QQR0532-001	LINE FILTER	
	⚠	VA5001	QAF0023-431Z	VARISTOR	
		CN1	QGF1028C1-11	FPC CONNECTOR,(1-11)U.DRUM,S3900U/U(C)	
			QGF1028C1-13	FPC CONNECTOR,(1-13)U.DRUM,S5900U/U(C)	
		CN2001	QGF1207C1-07	FPC CONNECTOR,(1-7)A/C HEAD	
		CN2002	QGB2532J1-02	CONNECTOR,(1-2)FE HEAD	
		CN3001	QGB2015M2-08	CONNECTOR,(1-8)CAPSTAN MOTOR	
		CN3002	QGF1207C1-05	FPC CONNECTOR,(1-5)DRUM MDA	
		CN3003	QGB2532J1-02	CONNECTOR,(1-2)LOADING MOTOR	
		CN3004	QGB2534J2-04	CONNECTOR,(1-4)ROTARY ENCODER	
		CN7001	QGF1207C1-09	FPC CONNECTOR,(1-9)ADV.JOG	
		CN7103	QGF1207C1-04	FPC CONNECTOR,(1-4)S JACK,S5900U/U(C)	
	⚠	CP4001	ICP-N25	CIRCUIT PROTECTOR	
	⚠	CP5302	ICP-N25	CIRCUIT PROTECTOR	
	⚠	F5001	QMF51N2-1R25J1	FUSE	T1.25A,AC250V

****

2D DIGITAL BOARD ASSEMBLY <05>

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		PW1	LPA10090-05A	2D DIGITAL BOARD ASSY,S5900U/U(C)	
			LPA10090-06A	2D DIGITAL BOARD ASSY,S3900U/U(C)	
		IC1201	JCP8036	IC	
	⚠	Q1201	2SC1317/RS/-T	TRANSISTOR	
		Q1202	2SA1576A/QR/-X	TRANSISTOR	
			or 2PA1576/R/-X	TRANSISTOR	
		Q1203	2SA1576A/QR/-X	TRANSISTOR	
			or 2PA1576/R/-X	TRANSISTOR	
		Q1204	2SC4081/QRS/-X	TRANSISTOR	
			or 2PC4081/R/-X	TRANSISTOR	
		Q1205	2SC4081/S/-X	TRANSISTOR	
		D1201	RD4.3ES/B3/-T2	ZENER DIODE	
		D1202	QUY153-050Y	IM BUS WIRE	
		R1201	NRSA02J-121X	MG RESISTOR	120Ω,1/10W
		R1202	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1203	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R1204	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R1205	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1206	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R1207	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R1208	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R1209	NRSA02J-180X	MG RESISTOR	18Ω,1/10W
		R1210	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R1211	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1212	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1213	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R1214	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R1215	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1216	NRSA02J-151X	MG RESISTOR	150Ω,1/10W
		R1217	NRSA02J-151X	MG RESISTOR	150Ω,1/10W
		R1218	NRSA02J-301X	MG RESISTOR	300Ω,1/10W
		R1220	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R1222	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1223	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1224	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R1230	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1231	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1232	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1233	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		VR1201	QVZ3521-103Z	V RESISTOR	
		B1204	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C1201	QEKJ0JM-476	E CAPACITOR	47µF,6.3V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C1211	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C1212	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C1213	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1214	NCF21CZ-105X	CAPACITOR	1µF,16V
		C1215	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C1216	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1217	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1218	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1219	NCF21CZ-105X	CAPACITOR	1µF,16V
		C1220	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C1222	NDC21HJ-151X	CAPACITOR	150pF,50V
		C1223	NDC21HJ-680X	CAPACITOR	68pF,50V
		C1225	NDC21HJ-151X	CAPACITOR	150pF,50V
		C1226	NDC21HJ-680X	CAPACITOR	68pF,50V
		C1227	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C1228	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C1229	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1230	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1231	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1232	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1233	QDYB1CM-103Y	CAPACITOR	0.01µF,16V
		C1234	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1235	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C1236	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1237	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1238	NDC21HJ-180X	CAPACITOR	18pF,50V
		C1239	NDC21HJ-560X	CAPACITOR	56pF,50V
		C1243	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1244	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C1245	NDC21HJ-150X	CAPACITOR	15pF,50V
		C1246	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		L1202	QQL29BJ-101Z	COIL	100µH
		L1203	QQL29BJ-101Z	COIL	100µH
		L1204	QQL29BJ-101Z	COIL	100µH
		L1205	QQL071J-2R7Y	COIL	2.7µH
		L1206	QQL071J-2R7Y	COIL	2.7µH
		L1207	QQL29BJ-101Z	COIL	100µH
		L1208	QQL071J-150Y	COIL	15µH
		L1209	QUY153-050Y	IM BUS WIRE	
	⚠	LC1201	QQL29BJ-101Z	COIL	100µH
		SD1	LP30706-001C	SHIELD FRAME(S-VHS)	
		SD2	LP30684-001A	SHIELD CASE(S-VHS),S5900U/U(C)	
		CN1201	QGG2502K1-17	HEADER PIN	

****

A/C HEAD BOARD ASSEMBLY <12>

PW1	LP10122-01A1	A/C HEAD BOARD ASSY
CN1	QGF1208F1-07	FPC CONNECTOR

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	

****

DEMOD BOARD ASSEMBLY <14>

PW1	PB11076A	DEMOD BOARD ASSY	
IC1501	UPC1852AGT	IC	
	or UPC1854AGT	IC	
R1501	QRE141J-102Y	RESISTOR	1kΩ,1/4W
R1502	QRE141J-334Y	RESISTOR	330kΩ,1/4W
R1503	QRE141J-124Y	RESISTOR	120kΩ,1/4W
R1504	QRE141J-302Y	RESISTOR	3kΩ,1/4W
R1505	QRE141J-512Y	RESISTOR	5.1kΩ,1/4W
R1506	QRE141J-333Y	RESISTOR	33kΩ,1/4W
R1507	QRE141J-333Y	RESISTOR	33kΩ,1/4W
R1508	QRE141J-392Y	RESISTOR	3.9kΩ,1/4W
R1509	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
R1510	QRE141J-392Y	RESISTOR	3.9kΩ,1/4W
R1511	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
R1517	QRE141J-123Y	RESISTOR	12kΩ,1/4W
C1501	QETN1CM-226	E CAPACITOR	22µF,16V
C1502	QETN1HM-104	E CAPACITOR	0.1µF,50V
C1503	QETN1HM-105	E CAPACITOR	1µF,50V
C1504	QETN1HM-475	E CAPACITOR	4.7µF,50V
C1505	QETN1HM-225	E CAPACITOR	2.2µF,50V
C1506	QETN1HM-104	E CAPACITOR	0.1µF,50V
C1507	QFV11HJ-473	F CAPACITOR	0.047µF,50V
C1508	QETN1HM-474	E CAPACITOR	0.47µF,50V
C1509	QETN1HM-104	E CAPACITOR	0.1µF,50V
C1510	QETN1HM-105	E CAPACITOR	1µF,50V
C1511	QETN1HM-105	E CAPACITOR	1µF,50V
C1512	QETN1HM-105	E CAPACITOR	1µF,50V
C1513	QETN1HM-335	E CAPACITOR	3.3µF,50V
C1514	QETN1HM-106	E CAPACITOR	10µF,50V
C1515	QETN1HM-105	E CAPACITOR	1µF,50V
C1516	QETN1HM-106	E CAPACITOR	10µF,50V
C1517	QETN1HM-106	E CAPACITOR	10µF,50V
C1518	QETN1HM-105	E CAPACITOR	1µF,50V
C1521	QETN1HM-106	E CAPACITOR	10µF,50V
BK1	LP40077-001A	BRACKET(BOARD)	
CN1501	QGG2502K1-09	HEADER PIN	

****

S JACK BOARD ASSEMBLY(S5900U/U(C))<36>

PW1	LPA20009-02B	S JACK BOARD ASSY
J7102	QND0084-001	S JACK
CN7108	QGF1209F1-04	FPC CONNECTOR,(1-4)MAIN

****

ADV.JOG BOARD ASSEMBLY <38>

PW1	LPA20013-04B	ADV.JOG BOARD ASSY
UN7002	QSW0905-001	ROTARY ENCODER
CN7004	QGF1209F1-09	FPC CONNECTOR,(1-9)MAIN

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	

****

LOADING MOTOR BOARD ASSEMBLY <55>

		PW2	LP10122-01A2	LOADING MOTOR BOARD ASSY	
		CN1	QGB2533K1-02	CONNECTOR	

****

R.PAUSE BOARD ASSEMBLY <91>

		PW2	LPA10134-03C2	R.PAUSE BOARD ASSY	
		R7156	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		B7151	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		B7152	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		J7104	PU60612	MINI JACK	

****

C.BOX BOARD ASSEMBLY <92>

		PW3	LPA10134-03C3	C.BOX BOARD ASSY	
		R7155	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		J7105	PU60612	MINI JACK	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	